SITE MANAGEMENT PLAN

(NCRWQCB Water Resource Protection Plan)

Prepared for:
HUMBOLDT GT, LLC

WDID #1_12CC418115
Tier 1 – Low Risk Program

Lead Agency:

State Water Resource Control Board
1001 I Street
Sacramento, CA 95814

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In Consultation with:

Humboldt GT LLC
41850 ST HWY 36
Dinsmore, CA 95526

October 2021

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INTRODUCTION

This Site Management Plan (SMP) has been developed to satisfy conditions of the **Tier 1 Low Risk** designation enrollment requirements in the State Water Resource Control Board (SWRCB) Order No. WQ 2017-0023-DWQ (Order). The purpose of the Order is to implement the Cannabis Policy requirements for waste discharges associated with cannabis cultivation. The Policy provides a structure for managing water quality and instream flow impacts associated with cannabis cultivation. It also establishes criteria for personal use and site conditional exemptions and includes a tiered approach for permitting discharges of waste. All eligible dischargers developing land for cannabis cultivation activities are required to enroll in the program under the Order. Dischargers must implement Best Practical Treatment or Control (BPTC) measures and submit technical and monitoring reports to assure compliance with the Order. The SMP describes how the discharger is complying with the applicable BPTC measures listed in the Policy and how they are being implemented on the subject property.

SITE INFORMATION

REGISTRANT: HUMBOLDT GT LLC
PO Box 546
Fortuna, CA 95540

SITE ADDRESS: 41850 ST HWY 36
Dinsmore, CA 95526

PARCEL: APN 210-221-001
Lat/Long: 40.4855, -123.6397

ZONING: General Plan: Residential Agriculture (RA)
Zone: Forestry Recreation (FR)

DISTURBED AREA: 0.75 Acres

LOCATION: The project site is in the Bridgeville area, approximately 60 miles south of Eureka. To reach the site from Eureka, take US-101 South for 20 miles to Exit 685 CA-36 E. Travel on CA-36 E for 39.6 miles. The driveway is on the right.

SITE DESCRIPTION

The property consists of a single 40-acre parcel (APN 210-221-001) that is mostly forested with even-aged, mature Douglas-fir stands. The Southern edge of the property contains natural grasslands edged by Oregon white oak. The site also contains multiple segments of unnamed class II watercourses, all tributaries to the Van Duzen River, a wetland feature that meets USACE's three parameters, and a spring diversion (S027099) that is utilized for cannabis irrigation and domestic use.

There is a legacy access road that runs through the property that requires upgraded stream crossings to accommodate 100-year peak streamflow. The clearing where the cultivation site is located was once used as a dirt bike track, as evidenced by manmade berms visible on satellite imagery. The disturbed area has since been revegetated and poses no threat to water quality in its current condition.

TIER AND RISK DESIGNATION

The Cannabis Policy provides criteria for evaluating threats to water quality for cannabis cultivation sites based on three site characteristics: proximity to waterbody, total disturbed area, and slope of the disturbed area. The previous discharger enrolled the project as **Tier 1 – Low Risk**, however due to water bladders and fuel tanks located in the riparian zone, the site should be classified as **Tier 1-High Risk**. The discharger has been made aware of the issue and will work with the SWRCB and Humboldt County Planning Department to secure the proper permits and remediate the error.

Table 1: Disturbed Area Size, Slopes, and Setbacks

Disturbed Area Type	Area (ft^2)	Slope	Distance to Water Body (ft)	Waterbody Type
Cultivation Area 1	21,190	<15%	176	Class II watercourse
Cultivation Area 2	6,316	<15%	147	Class II watercourse
Water Bladder 1	600	<15%	30	Class II watercourse
Water Bladder 2	600	<15%	62	Class II watercourse
Water Bladder 3	600	<15%	46	Class II watercourse
Water Bladder 4	600	<15%	69	Class II watercourse
Water Tank Farm	3,003	<15%	150	Wetland
TOTAL	**32,909**	--	--	--

BEST PRACTICAL TREATMENT OR CONTROL (BPTC) MEASURES

BPTC measures are being utilized as part of the road maintenance program to protect water quality. The *Solid Waste Management, Construction Site Best Management Practices Manual* by the CA Department of Transportation (Caltrans) is referenced for the correct installation, maintenance, and monitoring of all applicable erosion control and sediment capture BPTC measures.

A schedule of BPTC measures to be implemented and maintained throughout the site is shown in Appendix C, and Appendix D includes specifications for BPTCs.

1. SEDIMENT DISCHARGE BPTC MEASURES

1.1. SITE CHARACTERISTICS

1.1.1. SITE PLAN

The site map shows all relevant site features: streams, stream crossings, storage areas, roads, buildings, domestic wastewater treatment system, cultivation areas, and other disturbed areas related to cultivation activities (Appendix A).

1.1.2. Access Road Conditions

The residence is served by Access Road 1. The road is generally well-drained with signs of erosion at Stream Crossing 1 (STX-1) and Stream Crossing 2 (STX-2) indicating the culverts are undersized for peak flow events. Access Road 1 forks into two road segments (Access Road 3 and Access Road 4) that are inundated with stormwater runoff for much of the year. The portion of Access Road 3 nearest Access Road 1 is steep and not properly constructed. The entirety of Access Road 4 and the steep portion of Access Road 3 shall be decommissioned as part of a habitat enhancement project developed with the Department of Fish and Wildlife (CDFW) as part of the Lake and Streambed Alteration Agreement (LSAA 1600-2017-0908-R1).

Access Road 2 is an easement road that serves the cultivation sites. Crossings on the off-property section of Access Road 2 show signs of erosion and the discharger should coordinate with the adjacent property owner to ensure that the culverts are upgraded and maintained in accordance with SWRCB BPTCs.

Annual road maintenance activities consist of recontouring and adding additional crushed angular rock. Additional road maintenance is prescribed in section 1.2.1.

Table 2: Access Roads and Trails

Roadway/ Ownership	Distance (miles)	Description	Condition	Improvements
Access Road 1 - Private	0.06	Permanent native earth and crushed angular rock road	Good	Upgrade SC-1 and SC-2
Access Road 2 - Private	0.20	Permanent native earth and crushed angular rock road	Good	Coordinate with adjacent property owner to upgrade culverts
Access Road 3 - Private	0.13	Seasonal native earth	Poor - Good	Decommission steep road segment and remediate as prescribed in the LSAA
Access Road 4 - Private	0.04	Seasonal native earth	Poor	Decommission entire road and remediate as prescribed in the LSAA
Total Distance	0.43	--	--	--

1.1.3. Watercourses, Water Bodies, and Stream Crossings

There are two unnamed class II watercourses located on the subject parcel. Cultivation sites are located outside of the riparian setbacks, however four water storage bladders and two fuel tanks are located less than 100 feet from class II watercourses.

Water for cannabis irrigation and domestic use is supplied by a spring diversion. The discharger proposes to install a permitted groundwater well as a supplemental water source for cannabis

irrigation. Humboldt County Department of Environmental Health will issue the well permit upon approval of the conditional use permit (CUP-12453). An inventory of watercourses, waterbodies, and stream crossings can be found in Table 3 and 4.

Table 3: Watercourses, Water Bodies, and Stream Crossings

ID	Type	Notes
WC-1	Class II	Intermittent watercourse, tributary to Van Duzen River.
WC-2	Class II	Intermittent watercourse, tributary to Van Duzen River.
POD-1	Spring	Water diverted from a spring through a 1" poly-pipe to storage used both for domestic and commercial irrigation. Water is stored and logged separately for each use. No water is diverted for cannabis irrigation during the forbearance period (November – March).
Wetland-1	Wetland	A 1,706 square foot wetland feature characterized as palustrine, emergent, persistent, seasonally flooded/saturated (PEM1E Cowardin Type) delineated by SHN consultants.

There are two active stream crossings located within the property boundary. An inventory of all stream crossings can be found in Table 4. A Lake and Streambed Alteration Agreement (LSAA #1600-2017-0908-R1) has been filed with CDFW. Three stream crossings on the adjacent parcel were included in the agreement, however the discharger is in the process of requesting a modification to remove the off-site crossings. The discharger shall coordinate with the adjacent property owner to ensure the culverts are upgraded and maintained in accordance with BPTCs.

Table 4: Stream Crossings

ID	Location	Current Size	Proposed Size	Material	Notes
STX-1	(40.4836, -123.6421)	2 x 30"	48"	Corrugated HDPE	Two 30-inch culverts in stream crossing (STX-1) conveys water across Access Road 1. Signs of erosion indicate culverts are not designed to accommodate 100-year peak flows. Upgrade to one 48-inch culvert installed in-line and at natural grade of channel.
STX-2	(40.4837, -123.6417)	2 x 30"	60"	Corrugated HDPE and CMP	Two 30-inch corrugated plastic culverts in road and old, abandoned CMP in stream crossing. Signs of erosion indicate the existing culverts are not sized to accommodate 100-year peak flows. Upgrade to one 60-inch culvert in-line and at natural grade of the channel.

1.1.4. Legacy Waste Discharge Issues

There are two legacy stream crossings on site (STX-1 and STX-2) that are undersized and not in-line with the natural channel. The stream crossings shall be upgraded to meet 100-year peak streamflow requirements.

1.2. SEDIMENT EROSION PREVENTION AND SEDIMENT CAPTURE

1.2.1. EROSION PREVENTION AND BPTC MEASURES

1.2.1.1. IMPLEMENTATION OF EROSION PREVENTION BPTC MEASURES

The following physical BPTC measures may be employed to prevent erosion: placement of straw mulch, plastic covers, slope stabilization, soil binders, culvert outfall armoring. Biological BPTC measures may include vegetation preservation/replacement, hydro seeding, etc. A detailed inventory of proposed erosion control measures is included in Table 5.

Refer to the "Road Handbook", and BPTC Measure Specifications in Appendix D for additional details. An Implementation Schedule is included in Appendix D.

Table 5: Erosion Prevention Measures

ID	Location	BPTC Measure	Implementation Date
CD-1	STX-1	Critical dip	October 2021
CD-2	STX-2	Critical dip	October 2021

1.2.1.2. DISTURBED AREAS

The project site consists of two main cultivation areas and appurtenant facilities including drying, curing, and harvest storage, agricultural chemical storage, and cannabis-related waste storage. All disturbed areas are located on natural slopes (<15%), historical logging landings, and graded flats.

Refer to the "Road Handbook", and BPTC Measure Specifications in Appendix D for additional details. An Implementation Schedule is included in Appendix D.

Table 6: Existing and Proposed Disturbed Area Erosion Prevention Measures

ID	BPTC Measure	Existing or Implementation Date	Notes
Disturbed areas around cultivation sites	Revegetation	October 2021	Apply erosion control seed mix and straw mulch or jute netting to bare soil.
Access Road-3	Revegetation	October 2021	Apply erosion control seed mix and straw mulch or jute netting to fill slope as in interim erosion control measure until decommissioned.

1.2.2. SEDIMENT CONTROL BPTC MEASURES

1.2.2.1. ROADS, STREAM CROSSINGS, AND SOIL DISTURBANCE

The cannabis cultivator shall use appropriate erosion control measures to minimize erosion of disturbed areas. Fill soil shall not be placed where it may discharge into surface water. If used, weed-free straw mulch shall be applied at a rate of two tons per acre of exposed soils and, if warranted by site conditions, shall be secured to the

ground. Stream crossings shall be regularly inspected and maintained to prevent plugging.

An implementation schedule of physical and biological BPTCs is included in Appendix C.

1.2.3. MAINTENANCE ACTIVITIES-EROSION PREVENTION AND SEDIMENT CONTROL

1.2.3.1. MONITORING

Discharger shall regularly inspect and maintain the condition of the installed erosion and sediment controls. All long-term and interim erosion prevention and sediment capture BPTC measures that have been implemented will be monitored for effectiveness on a monthly basis at a minimum (Table 7). Any vegetation planted on previously disturbed areas will be monitored for success and replanted if necessary. The cultivator will monitor erosion and sediment control measures during and after each storm event that produces at least 0.5 in/day or 1 in/7 days of precipitation. In addition, winterization measures that are implemented will be monitored for effectiveness (inspected during the first major winter storm event) before the site is closed for the winter. See Appendix H for a log of monthly BPTC monitoring and maintenance records.

Table 7: BPTC Monitoring

Observations	Description	Frequency
Surface Water Runoff	Report any conditions of surface water runoff, including location, duration, source of runoff (irrigation water, storm water, etc.)	Monthly
Storm Water Runoff Constituents	Turbidity – collect sample once per calendar month when precipitation exceeds 0.25 in/day or when storm water runoff from the site is generated. pH – collect sample once per calendar month when precipitation amount is forecast to exceed 0.25 in/day.	Monthly until winterization procedures are completed
Soil Erosion Control	Report any indications of soil erosion (e.g. gullying, turbid water discharge, landslide, etc.)	Monthly
Sediment Capture	Report the status of sediment capture measures (e.g. silt fence, fiber rolls, settling basin, etc.)	Monthly
Erosion/Sediment Capture Maintenance	Report maintenance activities to maintain the effectiveness of erosion control and sediment capture measures (e.g. reinstallation of straw mulch, hydroseeding, tarp placement removal or stabilization of sediment captured, removal of settled sediment in a basin, etc.)	Monthly
Stabilization of Disturbed Area	Dischargers characterized as high risk (with any portion of the disturbed area within the setbacks)	Monthly
Materials Storage Erosion/Spills Prevention	Report materials delivered or stored at the site that could degrade water quality if discharged off-site (e.g. potting soil, manure, chemical fertilizer, gasoline, herbicides, pesticides, etc.)	Monthly

Septic, Holding Tank, or Chemical Toilet Servicing	Report the dates, activity, and name of the servicing company for servicing holding tanks or chemical toilets.	Monthly

1.2.3.1. MAINTENANCE

The discharger will maintain a Road and Drainage Feature Maintenance Log that includes sediment and erosion controls. This log is included in Appendix H.

2. FERTILIZER, PESTICIDE, HERBICIDE, AND RODENTICIDE BPTC MEASURES

2.1. CULTIVATION PRODUCT STORAGE, USE AND DISPOSAL

2.1.1. STORAGE

Appropriate BPTC measures shall be utilized when storing, handling, mixing, applying, and disposing of all fertilizers, pesticides, herbicides, and rodenticides. Each year an inventory is conducted prior to the beginning of the grow season and necessary products are delivered to the site as needed. See Appendix G for a monthly log of nutrient and agricultural chemical usage.

Fertilizers, insecticides, and fungicides are stored in secondary containment on-site during the growing season and applied at agronomic rates as needed. No rodenticides or herbicides have been used on site.

Table 8: Inventory of Agricultural Chemicals

Product Name	Product Type	Storage Method	Storage Location	Description of Use
Athena Grow A&B	Fertilizer	Manufacturer's container	Ag Chem Storage Area	Applied per manufacturer's specifications throughout the growing season.
Athena Bloom A&B	Fertilizer	Manufacturer's container	Ag Chem Storage Area	Applied per manufacturer's specifications throughout the growing season.
CaliMagic	Fertilizer	Manufacturer's container	Ag Chem Storage Area	Applied per manufacturer's specifications throughout the growing season.
Molasses	Fertilizer	Manufacturer's container	Ag Chem Storage Area	Applied at agronomic rates as needed throughout the growing season.

Mammoth P	Beneficial bacteria	Manufacturer's container	Ag Chem Storage Area	Applied at agronomic rates as needed throughout the growing season.
Plant Therapy	Integrated pest management	Manufacturer's container	Ag Chem Storage Area	Applied as needed throughout the growing season.
Green Cleaner	Integrated pest management	Manufacturer's container	Ag Chem Storage Area	Applied as needed throughout the growing season.
Mildew Cure	Botanical Fungicide	Manufacturer's container	Ag Chem Storage Area	Applied as needed throughout the growing season.

2.1.2. APPLICATION

Fertilizers are applied at agronomic rates throughout the growing season. Pesticides are used sparingly as the cultivator relies on good integrated pest management, scouting, and removal of pests. The application of agricultural chemicals is conducted according to manufacturer's recommendation.

Agricultural chemicals shall not be applied within 48 hours of a predicted rainfall event of 0.25 inches or greater with a probability greater than 50%. Cultivators should apply amendments at agronomic rates to reduce runoff.

2.1.3. DISPOSAL AND SPILL PREVENTION/CLEANUP

Empty nutrient containers are collected in contractor bags in the designated cannabis waste storage area and transported to the Eel River Transfer Station weekly.

The cultivator keeps absorbent materials designated for spill containment and spill cleanup equipment on site for use in an accidental spill of fertilizers, pesticides, hazardous materials, and other substances which may degrade waters of the State. If a spill occurs, the cultivator shall immediately notify the California Office of Emergency Services at 1-800-852-7550 and immediately initiate cleanup activities for all spills that could enter a waterbody or degrade groundwater.

3. PETROLEUM PRODUCT BPTC MEASURES

3.1. PETROLEUM PRODUCT BPTC MEASURES

Table 9: Petroleum Product Storage and Use

Petroleum Product	Storage Methods	Storage Location	Associated Equipment
Gasoline	500-gallon tank	Next to residence. To be relocated outside of riparian buffer zone.	Small equipment
Diesel	500-gallon tank	Next to residence. To be relocated outside of riparian buffer zone.	Backup generators
Propane	300-gallon tank	Next to residence.	Domestic use – heating and cooking
Motor Oil	Manufacturer's container	Shed with secondary containment.	Small equipment

3.1.1. STORAGE

Table 9 contains an inventory of petroleum products stored on site. All petroleum products shall be stored in a manner that prevents them from entering riparian setbacks or waters of the State. Currently petroleum products are stored in the garage near the residence.

All petroleum products are stored in accordance with the label instructions. The discharger shall relocate the diesel and gasoline storage tanks outside of riparian buffer areas and add secondary containment. There are two domestic back-up generators on site. Generators shall be protected from rainfall and have secondary containment.

3.1.2. APPLICATION

Vehicles are refueled and serviced off-site. Generators are refueled and serviced on-site, outside of riparian setbacks. The cultivator refills oil and gas for small tools approximately twice per year. Petroleum products are mixed and applied over secondary containment with an absorbent mat in place to catch drips or spills. The cultivator monitors and inspects all equipment using oil, hydraulic fluid, or petroleum products for leaks prior to use and repairs leaks immediately to prevent spillage of petroleum products.

3.1.3. DISPOSAL AND SPILL PREVENTION/CLEANUP

Empty petroleum product containers that are not intended to be refilled shall be disposed of per label instructions. Until proper disposal, empty containers will be stored in heavy duty contractor bags in the designated fuel storage area.

The cultivator keeps absorbent materials designated for spill containment, and spill cleanup equipment onsite for use in an accidental spill of fertilizers, pesticides, hazardous materials, and other substances which may degrade waters of the state. The discharger shall immediately notify the California Office of Emergency Services at 1-800-852-7550 and immediately initiate cleanup activities for all spills that could enter a waterbody or degrade groundwater.

4. TRASH/REFUSE AND DOMESTIC WASTEWATER BPTC MEASURES

4.1. HOUSEHOLD TRASH AND CULTIVATION RELATED WASTE

Cultivation-related waste is stored in enclosed containers with secure lids in the designated waste storage areas to prevent surface water contamination and wildlife intrusion. Cultivation-related waste, excess soil, and organic materials not slated to be reused or mulched will be disposed of properly at the Eel River Transfer Station once a week. Domestic waste is generated by the single-family residence on the property. Waste and recycling are bagged and temporarily stored in the residence until being transported to the Eel River Transfer Station once a week.

4.2. RESIDENTS, EMPLOYEES AND VISITORS

4.2.1. DOMESTIC WASTEWATER – GENERATION & DISPOSAL

There are two full-time residents living on the property. A permitted septic system near the residence handles all domestic wastewater.

Table 10: Inventory of Wastewater Sources on Site

Wastewater Source	Treatment Type	Location	Notes
Residence	Septic	Behind residence	Septic is serviced once a year.

5. WINTERIZATION BPTC MEASURES

5.1. ACTIVITIES AND MAINTENANCE

The discharger shall implement all applicable Erosion Control, Soil Disposal, and Spoils Management Requirements in addition to the Winterization Requirements below by November 1st. In preparation for the winter season, the discharger shall perform the following corrective actions:

Table 11: Winterization Requirements

ID	ACTIVITIES AND MAINTENANCE
STX-1	Routinely inspect and clear culvert of sediment or debris. Apply rock armor as needed to prevent scour.
STX-2	Routinely inspect and clear culvert of sediment or debris. Apply rock armor as needed to prevent scour.
CD-1	Install critical dip to prevent stream diversion.
CD-2	Install critical dip to prevent stream diversion.
Inboard ditches	Routinely inspect, clear, and rock armor inside ditches as needed.
Cultivation Areas	Plant cover crop or secure tarps over cultivation beds and Smart Pots prior to the winter season. Apply mulch around cultivation area as needed.

Agricultural Chemicals	Remove all agricultural chemicals from the project site during the winter season or store in secondary containment within a secure shed.
Cultivation Waste	Dispose of root balls and branches, store pots and other cultivation-related items in durable goods storage area before the onset of the winter season.

5.1.1. ROADS AND STREAM CROSSINGS

Discharger shall block or otherwise close any temporary access roads to all motorized vehicles no later than the onset of the winter period each year (November 1). Heavy machinery, land disturbing activities, and maintenance shall not take place during the winter period (November 1 – April 1). Culverts shall be inspected routinely and cleared of sediment and debris before the onset of fall and when winter precipitation is forecast to exceed 0.5 in/day or 1.0 in/week. Any sediment or debris found to be blocking culverts shall be removed and appropriately stored in the designated trash and recycling storage area until it can be transported off-site.

5.1.2. DISTURBED AREAS

All disturbed areas and construction entrances and exits shall be stabilized to control erosion and sediment discharges from land disturbance. To ensure sediment and erosion control measures are functioning as intended the cultivator shall perform the following maintenance during the wet season:

- Plant cover crops, or tarp used potting soil to prevent runoff.
- Seed and mulch any disturbed area that contains bare soil.
- Fortify areas of excessive scour or flow with gravel, fiber rolls, or straw bales.

5.1.3. STORAGE AND STOCKPILED MATERIALS

5.1.3.1. CULTIVATION RELATED PRODUCTS AND WASTE

Any fertilizers, pesticides, herbicides, and rodenticides will be removed from the site at the end of the growing season or stored in secondary containment within a secure shed. Cultivation and domestic waste, spent agricultural chemical containers, woody debris, and soil not intended to be reused will be transported off-site prior to the onset of the rainy season (November 1). Soil or construction materials that will be reused are to be stored on stable upland areas outside of riparian setbacks or covered and enclosed in such a way that they will not be transported to waters of the state or ensnare wildlife.

5.1.3.2. VEHICLES, MACHINES AND PETROLUEM PRODUCTS/WASTE

Vehicles, machines, and petroleum products shall be stored in such a way that they do not impact wildlife or cause runoff. Residents keep personal vehicles parked near the residence during the growing season. Petroleum products are stored in secondary containment within enclosed areas not accessible to wildlife. No vehicles, machines, or petroleum products shall be stored within riparian setbacks.

5.1.3.3. STOCKPILED MATERIALS

Prior to the onset of winter, any stockpiled materials shall be covered and stabilized with tarps, berms, and fiber rolls in secure upland areas outside of riparian setbacks or stored in enclosed storage sheds where materials cannot be transported to surface waters or pose a hazard to wildlife.

6. SUMMARY OF CORRECTIVE ACTIONS

Table 12 is a summary of corrective actions and BPTC measures. These measures must be implemented prior to the start of the winter period (November 1st).

Table 12: Proposed BPTCs and Corrective Measures

BPTC	DESCRIPTION
Riparian Buffer Zones	Notify SWRCB of cannabis activities in riparian buffer zones. Contact Humboldt County Planning Department to obtain Special Permit to work in Streamside Management Area (SMA).
Stream Crossings	Upgrade culverts at STX-1 and STX-2 as specified in LSAA. Notify CDFW prior to beginning work and perform work outside of the winter period (November 1 – April 1).
Decommission Road	Decommission road segments and implement habitat enhancement project as outlined in LSAA. Obtain proper permits and contact qualified professional before work begins.
Water Bladders	Replace water bladders with HDPE storage tanks located outside of the riparian buffer zone.
Petroleum Products	Petroleum products should be moved out of the riparian buffer zone to an upland location with adequate secondary containment. Petroleum products shall be stored separately from agricultural chemicals.

7. APPENDICES

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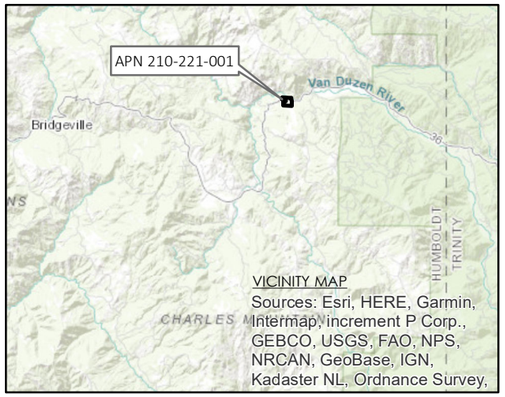
APPENDIX A: SITE MAP

HUMBOLDT GT, LLC



DIRECTIONS TO SITE

TAKE HIGHWAY 101 SOUTH FROM EUREKA TO HIGHWAY 36 EAST. TRAVEL ON HIGHWAY 36 FOR 39.7 MILES. DRIVEWAY IS ON THE RIGHT.

PROJECT DESCRIPTION

HUMBOLDT GT, LLC SEEKS A SPECIAL PERMIT FOR 9,080 SQUARE FEET OF EXISTING MIXED-LIGHT AND 1,210 SQUARE FEET OF EXISTING OUTDOOR CULTIVATION. THE WATER SOURCE IS RAINWATER CATCHMENT SUPPLEMENTED BY A SPRING. THE APPLICANT HAS APPLIED FOR A GROUNDWATER WELL. A SPECIAL PERMIT IS SOUGHT FOR AN ENCROACHMENT OF THE SMA FOR THE USAGE OF THE SPRING AND TO RELOCATE LEGACY CULTIVATION OUT OF RIPARIAN SETBACKS. PROCESSING WILL OCCUR OFFISTE UNTIL A COMMERCIAL ADA COMPLIANT FACILITY CAN BE BUILT. POWER IS CURRENLTY SUPPLIED BY GENERATORS, BUT THE APPLICANT IS SEEKING AN AG DROP FROM PG&E.

GENERAL NOTES

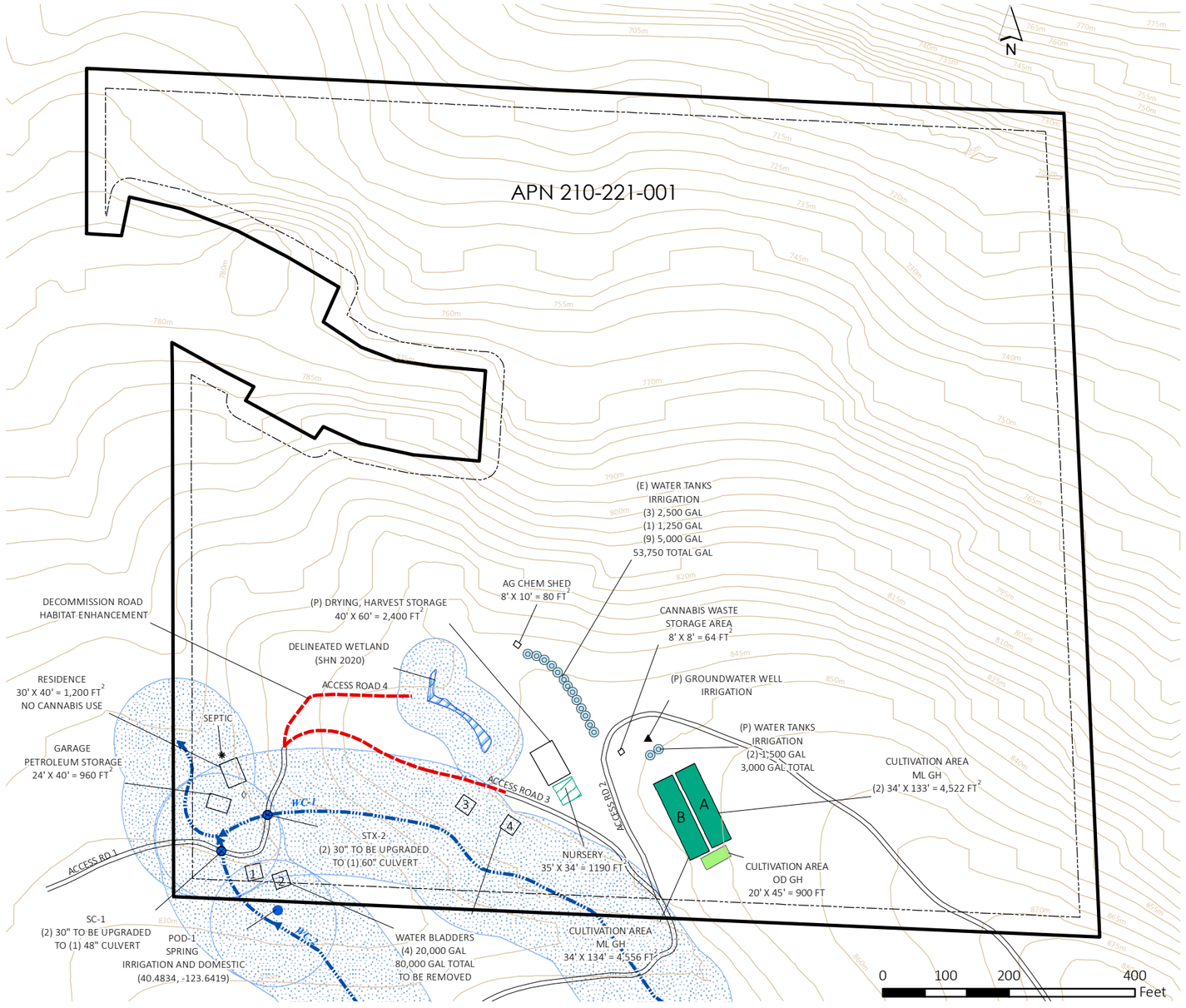
1. DRAWING SCALE AS NOTED. WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS.

2. THIS IS NOT A BOUNDARY SURVEY. BOUNDARY INFORMATION DEPICTED HAS BEEN OBTIANED FROM HUMBOLDT COUNTY GIS DATA AND ADJUSTED BASED ON CONVERSATIONS WITH THE APPLICANT/OWNER. PR PROFESSIONAL SERVICES HAS NOT VERIFIED THIS PROPERTY BOUNDARY.

3. THERE ARE NO SCHOOLS, SCHOOL BUS STOPS, PLACES OF WORSHIP, PUBLIC PARKS, OR TRIBAL RESOURCES WITHIN 600 FEET OF THE CULTIVATION AREA.

4. THERE ARE NO RESIDENCES ON ADJOINING PARCELS WITHIN 300 FEET OF THE PROPOSED CULTIVATION AREA.

5. ANY EXISTING DEVELOPMENT CONSTRUCTED WITHOUT THE BENEFIT OF COUNTY REVIEW WILL BE SUBJECT TO THE HUMBOLDT COUNTY BUILDING DEPARTMENT UPON APPROVAL.



APPLICANT

HUMBOLDT GT, LLC (#12453)
PO BOX 546
FORTUNA, CA 95540

OWNER

ANDRII DUBYK & DIMITRI CHLYAGA
PO BOX 546
FORTUNA, CA 95540

OWNER AGENT

PR PROFESSIONAL SERVICES
3034 H ST, SUITE B
EUREKA, CA 95501
(707)496-1455

SITE ADDRESS

41850 ST HWY 36
DINSMORE, CA 95536

TREES TO BE REMOVED = NONE

PROPOSED MIXED LIGHT = 9,080 SQ. FT.
PROPOSED OUTDOOR = 1,210 SQ. FT.
TOTAL = 10,290 SQ. FT.

EARTHWORK QUANITIES = NONE

WATER = PRIVATE SPRING
SEWER = PRIVATE SEPTIC, UNPERMITTED

PARCEL SIZE = 40 ACRES

ZONING = FR-B-5(40)
GENERAL PLAN DESIGNATION = RA 40

SRA AREA = YES

COASTAL ZONE = NO
100 YEAR FLOOD ZONE = NO

BSL = 30 FT

PREPARED BY CHRISTINA SUNDMAN FOR
PR PROFESSIONAL SERVICES LLC
JUNE 2, 2021

SCALE 1:2,400 1 INCH = 200 FEET
PARCEL: HUMBOLDT COUNTY GIS

- POD (spring)
- Water tank
- Stream crossing
- Parking (4 vehicles)
- Access Road
- Road to be decom
- Class II watercourse
- Setback
- Mixed light cultivation area
- Outdoor cultivation area
- Nursery
- Wetland
- Riparian buffer zone
- 30 ft building setback line (BSL)
- Property boundary (adjusted per property owner)

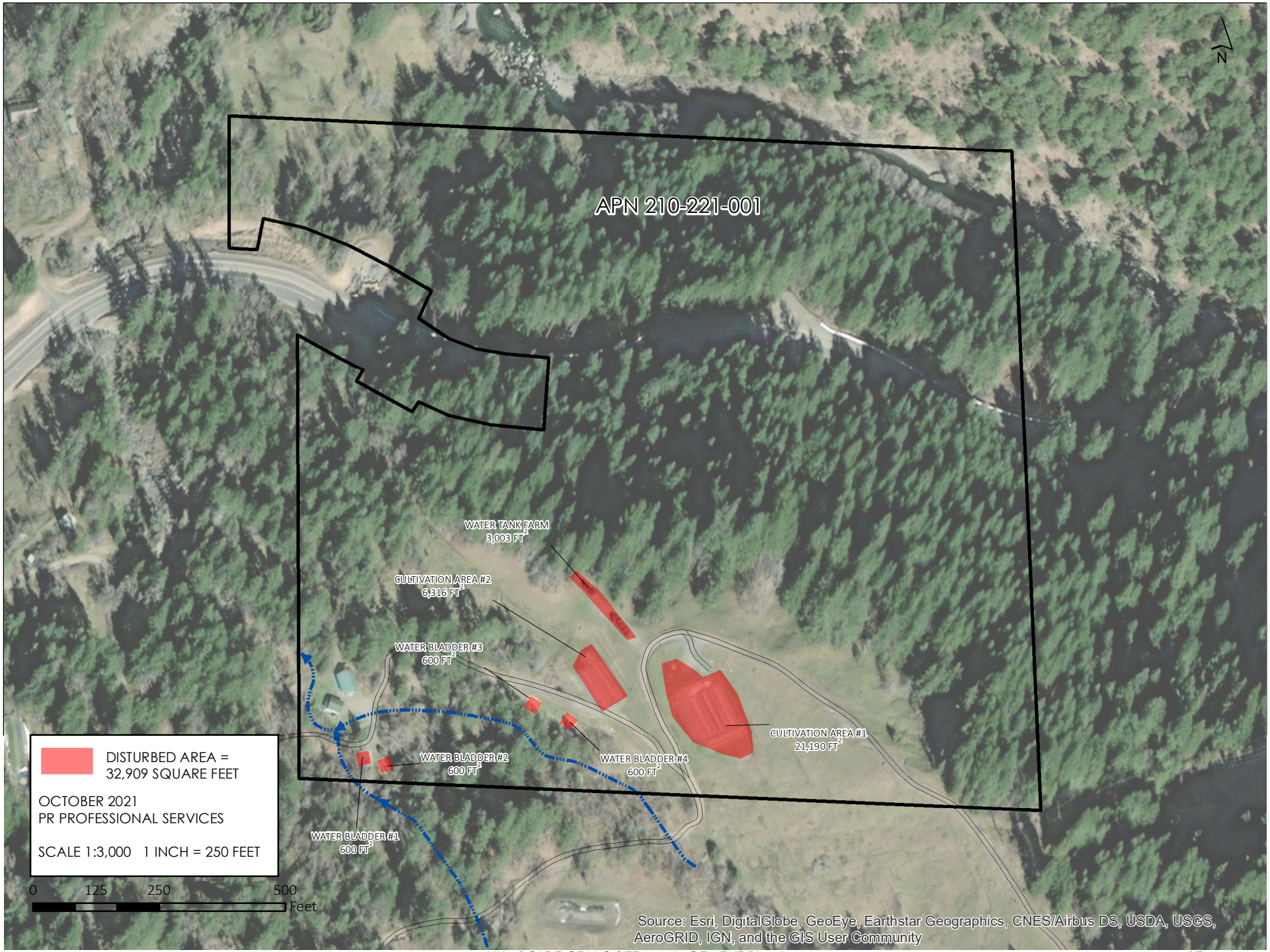
ABBREVIATIONS:
POD = POINT OF DIVERSION
SC = STREAM CROSSING
OD = OUTDOOR
ML = MIXED LIGHT
GH = GREENHOUSE

C0

humboldt GT County Site Plan 04.12.21.pdf

APPENDIX B: DISTURBED AREA MAP

DISTURBED AREA MAP



APPENDIX C: BPTC IMPLEMENTATION/MAINTENANCE SCHEDULE

CULTIVATION ACTIVITIES SCHEDULE

Highlight or check off the months when the following activities will take place.

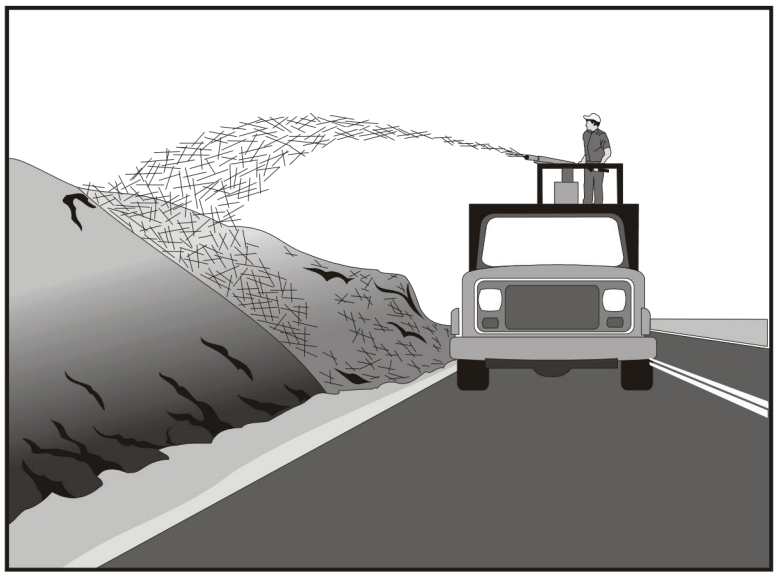
BPTC IMPLEMENTATION & MAINTENANCE SCHEDULE

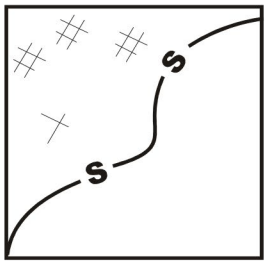
Type			Measures	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
EROSION PREVENTION	Physical	Runoff Management	Diversions - Perimeter Dikes, Swale, Check Dams, Water Bars, Rolling Dips Conveyance - Lined Waterway, Grade Stabilization Structures												
		Soil Stabilization	Non-Vegetative Soil Cover - Mulching, Soil Tackifiers, Slope Protection, Riprap, Fiber Rolls and other Rolled Erosion Control Products (RECP), Plastic Cover, Surface Roughening												
		Structural	Retaining Wall, Sediment Basins/Traps, Silt Fences; Armoring and Velocity Dissipators; Inlet, Outlet, and Streambank Protection/Stabilization												
	Biological	Runoff Management	Diversion/Conveyance - Grassed Waterway												
		Soil Stabilization	Temporary/Permanent Seeding, Hydroseeding, Topsoiling, Live Mulching, Vegetation Preservation/Replacement												
		Biotechnical	Biotechnical - Wattling, Brush Layering, Branch Packing, Live Cribwalls, Live Fascines, Live Plantings, Vegetated Streambank Protection, Vegetated Gabions												
SEDIMENT CONTROL	Physical	Runoff Management	Sediment Conveyance - Lined Drainageways												
		Sediment Retention	Sediment Basins/Traps - Pipe Outlet Traps, Embankment and Debris Basins, Settling Ponds, Rock Dams												
		Sediment Barriers	Straw Bale Dikes, Drain Inlet Filters, Gravel Bag Berms, Fiber Rolls, Silt Fences, Turbidity Curtain												
		Mud and Dust Control	Construction Entrance and Road Stabilization, Dust Control, Waterway Crossing												
	Biological	Soil Stabilization	Hydroseeding, Vegetated Outfalls												
INTERIM EROSION & SEDIMENT CONTROL MEASURES			Installed and Maintained as Needed												

APPENDIX D: BPTC MEASURE SPECIFICATIONS

Straw Mulch

SS-6





Standard Symbol

BMP Objectives

- ● Soil Stabilization
- ○ Sediment Control
- ○ Tracking Control
- ● Wind Erosion Control
- ○ Non-Storm Water Management
- ○ Materials and Waste Management

Definition and Purpose

Straw mulch consists of placing a uniform layer of straw and incorporating it into the soil with a studded roller or anchoring it with a stabilizing emulsion. This is one of five temporary soil stabilization alternatives to consider.

Appropriate Applications

- Straw mulch is typically used for soil stabilization as a temporary surface cover on disturbed areas until soils can be prepared for revegetation and permanent vegetation is established.
- Also typically used in combination with temporary and/or permanent seeding strategies to enhance plant establishment.

Limitations

- Availability of erosion control contractors and straw may be limited prior to the rainy season due to high demand.
- There is a potential for introduction of weed-seed and unwanted plant material.
- When straw blowers are used to apply straw mulch, the treatment areas must be within 45 m (150 ft) of a road or surface capable of supporting trucks.
- Straw mulch applied by hand is more time intensive and potentially costly.
- May have to be removed prior to permanent seeding or soil stabilization.
- “Punching” of straw does not work in sandy soils.

Straw Mulch

SS-6

Standards and Specifications

- Straw shall be derived from wheat, rice, or barley.
- All materials shall conform to Standard Specifications Sections 20-2.06, 20-2.07 and 20-2.11.
- A tackifier is the preferred method for anchoring straw mulch to the soil on slopes.
- Crimping, punch roller-type rollers, or track-walking may also be used to incorporate straw mulch into the soil on slopes. Track walking shall only be used where other methods are impractical.
- Avoid placing straw onto the traveled way, sidewalks, lined drainage channels, sound walls, and existing vegetation.
- Straw mulch with tackifier shall not be applied during or immediately before rainfall.

Application Procedures

- Apply loose straw at a minimum rate of 3,570 kg/ha (4,000 lb/ac), or as indicated in the project's special provisions, either by machine or by hand distribution.
- If stabilizing emulsion will be used to anchor the straw mulch in lieu of incorporation, roughen embankment or fill areas by rolling with a crimping or punching-type roller or by track walking before placing the straw mulch. Track walking should only be used where rolling is impractical.
- The straw mulch must be evenly distributed on the soil surface.
- Anchor the mulch in place by using a tackifier or by "punching" it into the soil mechanically (incorporating).
- A tackifier acts to glue the straw fibers together and to the soil surface. The tackifier shall be selected based on longevity and ability to hold the fibers in place.
- A tackifier is typically applied at a rate of 140 kg/ha (125 lb/ac). In windy conditions, the rates are typically 200 kg/ha (178 lb/ac).
- Methods for holding the straw mulch in place depend upon the slope steepness, accessibility, soil conditions and longevity. If the selected method is incorporation of straw mulch into the soil, then do as follows:
  - Applying and incorporating straw shall follow the requirements in Standard Specifications Section 20-3.03.
  - On small areas, a spade or shovel can be used.

- On slopes with soils, which are stable enough and of sufficient gradient to safely support construction equipment without contributing to compaction and instability problems, straw can be "punched" into the ground using a knife-blade roller or a straight bladed coulter, known commercially as a "crimper."

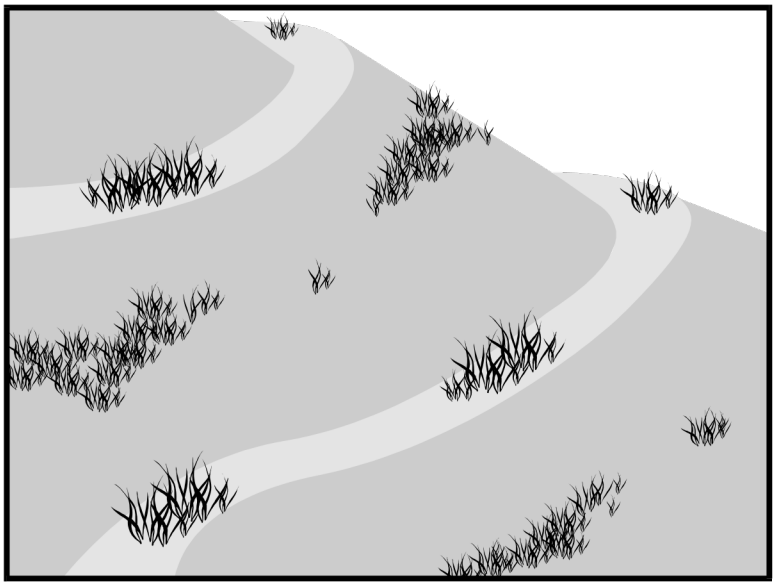
- On small areas and/or steep slopes, straw can also be held in place using plastic netting or jute. The netting shall be held in place using 11 gauge wire staples, geotextile pins or wooden stakes. Refer to BMP SS-7, "Geotextiles, Plastic Covers and Erosion Control Blankets/Mats."

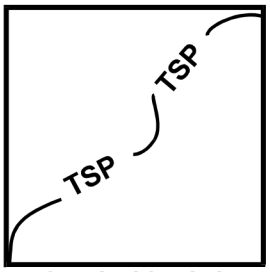
Maintenance and Inspections

- The key consideration in Maintenance and Inspection is that the straw needs to last long enough to achieve erosion control objectives.
- Maintain an unbroken, temporary mulched ground cover while DSAs are non-active. Repair any damaged ground cover and re-mulch exposed areas.
- Reapplication of straw mulch and tackifier may be required by the Resident Engineer (RE) to maintain effective soil stabilization over disturbed areas and slopes.
- After any rainfall event, the Contractor is responsible for maintaining all slopes to prevent erosion.

Hydroseeding

SS-4





Standard Symbol

BMP Objectives

- ● Soil Stabilization
- ○ Sediment Control
- ○ Tracking Control
- ● Wind Erosion Control
- ○ Non-Storm Water Management
- ○ Materials and Waste Management

Definition and Purpose

Hydroseeding typically consists of applying a mixture of wood fiber, seed, fertilizer, and stabilizing emulsion with hydro-mulch equipment, which temporarily protects exposed soils from erosion by water and wind. This is one of five temporary soil stabilization alternatives to consider.

Appropriate Applications

Hydroseeding is applied on disturbed soil areas requiring temporary protection until permanent vegetation is established or disturbed soil areas that must be re-disturbed following an extended period of inactivity.

Limitations

season to ensure adequate vegetation establishment and erosion control. Otherwise, hydroseeding must be used in conjunction with a soil binder or mulching (i.e., straw mulch), refer to BMP SS-5, Table 1 for options.

- Steep slopes are difficult to protect with temporary seeding.
- Temporary seeding may not be appropriate in dry periods without supplemental irrigation.
- Temporary vegetation may have to be removed before permanent vegetation is applied.
- Temporary vegetation is not appropriate for short-term inactivity.
- Hydroseeding may be used alone only when there is sufficient time in the

Hydroseeding

SS-4

Standards and Specifications

To select appropriate hydroseeding mixtures, an evaluation of site conditions shall be performed with respect to:

- Soil conditions
- Site topography
- Season and climate availability
- Vegetation types
- Maintenance
- Sensitive
- Water
- Plans for permanent vegetation

- Selection of hydroseeding mixtures shall be approved by the District Landscape Architect and the Construction Storm Water Coordinator.

The following steps shall be followed for implementation:

- Seed mix shall comply with the Standard Specifications Section 20-2.10, and the project's special provisions.
- Hydroseeding can be accomplished using a multiple-step or one-step process; refer to the special provisions for specified process. The multiple-step process ensures maximum direct contact of the seeds to soil. When the onestep process is used to apply the mixture of fiber, seed, etc., the seed rate shall be increased to compensate for all seeds not having direct contact with the soil.
- Prior to application, roughen the slope, fill area, or area to be seeded with the furrows trending along the contours. Rolling with a crimping or punching type roller or track walking is required on all slopes prior to hydroseeding.
  Track walking shall only be used where other methods are impractical.
- Apply a straw mulch to keep seeds in place and to moderate soil moisture and temperature until the seeds germinate and grow, refer to Standard Specifications Sections 20-2.06 and 20-3.03.
- All seeds shall be in conformance with the California State Seed Law of the Department of Agriculture. Each seed bag shall be delivered to the site sealed and clearly marked as to species, purity, percent germination, dealer's guarantee, and dates of test; provide the Resident Engineer (RE) with such documentation. The container shall be labeled to clearly reflect the amount of Pure Live Seed (PLS) contained. All legume seed shall be pellet-inoculated. Inoculant sources shall be species-specific and shall be applied at a rate of 2 kg of inoculant per 100 kg of seed (2-lb inoculant per 100-lb seed), refer to Standard Specifications Section 20-2.10.

- Commercial fertilizer shall conform to the requirements of the California Food and Agricultural Code. Fertilizer shall be pelleted or granular form.

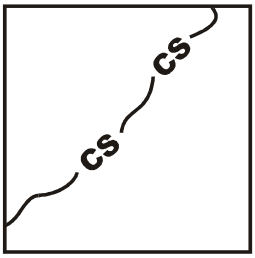
- Follow-up applications shall be made as needed to cover weak spots, and to maintain adequate soil protection.
- Avoid over-spray onto the traveled way, sidewalks, lined drainage channels, and existing vegetation.

Maintenance and Inspection

- All seeded areas shall be inspected for failures and re-seeded, fertilized, and mulched within the planting season, using not less than half the original application rates. Any temporary revegetation efforts that do not provide adequate cover must be reapplied at a scheduled recommended by the Caltrans Landscape Architect or RE.
- After any rainfall event, the Contractor is responsible for maintaining all slopes to prevent erosion.

Stockpile Management

WM-3



Standard Symbol

BMP Objectives

- ● Soil Stabilization
- ● Sediment Control
- ○ Tracking Control
- ○ Wind Erosion Control
- ○ Non-Storm Water Management
- ● Materials and Waste Management

Definition and Purpose

Stockpile management procedures and practices are designed to reduce or eliminate air and storm water pollution from stockpiles of soil, and paving materials such as portland cement concrete (PCC) rubble, asphalt concrete (AC), asphalt concrete rubble, aggregate base, aggregate subbase or pre-mixed aggregate, asphalt binder (so called “cold mix” asphalt) and pressure treated wood.

Appropriate Applications

Implemented in all projects that stockpile soil and other materials.

Limitations

- None identified

Standards and Specifications

- Protection of stockpiles is a year-round requirement.
- Locate stockpiles a minimum of 15 m (50 ft)away from concentrated flows of storm water, drainage courses, and inlets.
- Implement wind erosion control practices as appropriate on all stockpiled material. For specific information see BMP WE-1, “Wind Erosion Control.”
- Stockpiles of contaminated soil shall be managed in accordance with BMP WM-7, “Contaminated Soil Management.”
- Bagged materials should be placed on pallets and under cover.

Protection of Non-Active Stockpiles

Non-active stockpiles of the identified materials shall be protected further as follows:

- ***Soil stockpiles:***
  - During the rainy seasons, soil stockpiles shall be covered or protected with soil stabilization measures and a temporary perimeter sediment barrier at all times.
  - During the non-rainy season, soil stockpiles shall be covered and protected with a temporary perimeter sediment barrier prior to the onset of precipitation.
- ***Stockpiles of portland cement concrete rubble, asphalt concrete, asphalt concrete rubble, aggregate base, or aggregate subbase:***
  - During the rainy season, the stockpiles shall be covered or protected with a temporary perimeter sediment barrier at all times.
  - During the non-rainy season, the stockpiles shall be covered or protected with a temporary perimeter sediment barrier prior to the onset of precipitation.
- ***Stockpiles of "cold mix":***
  - During the rainy season, cold mix stockpiles shall be placed on and covered with plastic or comparable material at all times.
  - During the non-rainy season, cold mix stockpiles shall be placed on and covered with plastic or comparable material prior to the onset of precipitation.
- ***Stockpiles/Storage of pressure treated wood with copper, chromium, and arsenic or ammonical, copper, zinc, and arsenate:***
  - During the rainy season, treated wood shall be covered with plastic or comparable material at all times.
  - During the non-rainy season, treated wood shall be covered with plastic or comparable material and shall be placed on pallets prior to the onset of precipitation.

Protection of Active Stockpiles

Active stockpiles of the identified materials shall be protected further as follows:

- All stockpiles shall be covered, stabilized, or protected with a temporary linear sediment barrier prior to the onset of precipitation.

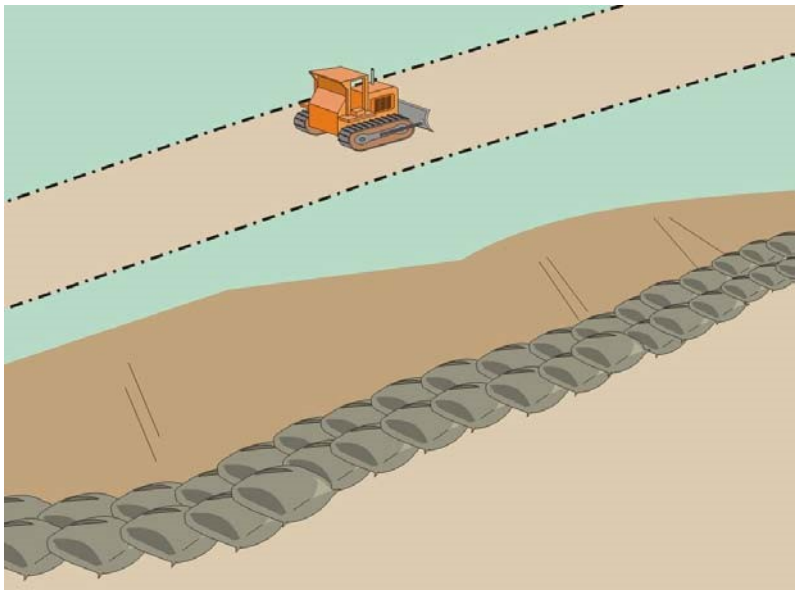
- Stockpiles of "cold mix" shall be placed on and covered with plastic or comparable material prior to the onset of precipitation.

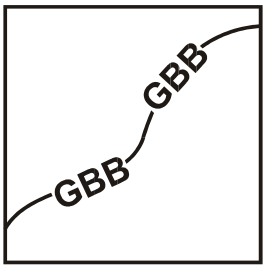
Maintenance and Inspections

- Repair and/or replace perimeter controls and covers as needed, or as directed by the RE, to keep them functioning properly. Sediment shall be removed when sediment accumulation reaches one-third (1/3) of the barrier height.

Gravel Bag Berm

SC-6





Standard Symbol

BMP Objectives

- ○ Soil Stabilization
- ● Sediment Control
- ○ Tracking Control
- ○ Wind Erosion Control
- ○ Non-Storm Water Management
- ○ Materials and Waste Management

Appropriate Applications

Definition and Purpose

A gravel bag berm consists of a single row of gravel bags that are installed end to end to form a barrier across a slope to intercept runoff, reduce its flow velocity, release the runoff as sheet flow and provide some sediment removal. Gravel bags can be used where flows are moderately concentrated, such as ditches, swales, and storm drain inlets (see BMP SC-10, Storm Drain Inlet Protection) to divert and/or detain flows.

- BMP may be implemented on a project-by-project basis with other BMPs when determined necessary and feasible by the RE.
  - Along streams and channels.
  - Below the toe of exposed and erodible slopes.
  - Down slope of exposed soil areas.
  - Around stockpiles.

Gravel Bag Berm

SC-6

- Across channels to serve as a barrier for utility trenches or provide a temporary channel crossing for construction equipment, to reduce stream impacts.
- Parallel to a roadway to keep sediment off paved areas.
- At the top of slopes to divert roadway runoff away from disturbed slopes.
- Along the perimeter of a site.
- To divert or direct flow or create a temporary sediment basin.
- During construction activities in stream beds when the contributing drainage area is less than 2 ha (5 ac).
- When extended construction period limits the use of either silt fences or straw bale barriers.
- When site conditions or construction sequencing require adjustments or relocation of the barrier to meet changing field conditions and needs during construction.
- At grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow.

Limitations

- Degraded gravel bags may rupture when removed, spilling contents.
- Installation can be labor intensive.
- Limited durability for long term projects.
- When used to detain concentrated flows, maintenance requirements increase.

Gravel Bag Berm

SC-6

Standards and Specifications

Materials

- Bag Material: Bags shall be woven polypropylene, polyethylene or polyamide fabric, minimum unit weight 135 g/m2 (four ounces per square yard), mullen burst strength exceeding 2,070 kPa (300 psi) in conformance with the requirements in ASTM designation D3786, and ultraviolet stability exceeding 70% in conformance with the requirements in ASTM designation D4355.
- Bag Size: Each gravel-filled bag shall have a length of 450 mm (18 in), width of 300 mm (12 in), thickness of 75 mm (3 in), and mass of approximately 15 kg (33 lb). Bag dimensions are nominal, and may vary based on locally available materials. Alternative bag sizes shall be submitted to the RE for approval prior to deployment.
- Fill Material: Gravel shall be between 10 mm and 20 mm (0.4 and 0.8 inch) in diameter, and shall be clean and free from clay balls, organic matter, and other deleterious materials. The opening of gravel-filled bags shall be between 13 kg and 22 kg (28 and 48 lb) in mass. Fill material is subject to approval by the RE.

Installation

- When used as a linear control for sediment removal:
  - Install along a level contour.
  - Turn ends of gravel bag row up slope to prevent flow around the ends.
  - Generally, gravel bag barriers shall be used in conjunction with temporary soil stabilization controls up slope to provide effective erosion and sediment control.
- When used for concentrated flows:
  - Stack gravel bags to required height using a pyramid approach.
  - Upper rows of gravel bags shall overlap joints in lower rows.
- Construct gravel bag barriers with a set-back of at least 1m from the toe of a slope. Where it is determined to be not practicable due to specific site conditions, the gravel bag barrier may be constructed at the toe of the slope, but shall be constructed as far from the toe of the slope as practicable.
- Requires Certificate of Compliance per Standard Specifications 6-1.07.

Maintenance and Inspection

- Inspect gravel bag berms before and after each rainfall event, and weekly throughout the rainy season.

- Reshape or replace gravel bags as needed, or as directed by the RE.
- Repair washouts or other damages as needed, or as directed by the RE.
- Inspect gravel bag berms for sediment accumulations and remove sediments when accumulation reaches one-third of the berm height. Removed sediment shall be incorporated in the project at locations designated by the RE or disposed of outside the highway right-of-way in conformance with the Standard Specifications.
- Remove gravel bag berms when no longer needed. Remove sediment accumulations and clean, re-grade, and stabilize the area.

Fiber Rolls

SC-5

BMP Objectives

- ● Soil Stabilization
- ● Sediment Control
- ○ Tracking Control
- ○ Wind Erosion Control
- ○ Non-Storm Water Management
- ○ Materials and Waste Management

Standard Symbol

Definition and Purpose

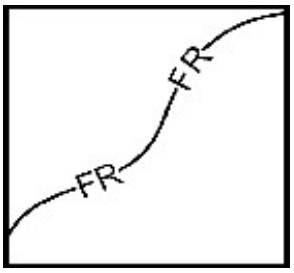
A fiber roll consists of wood excelsior, rice or wheat straw, or coconut fibers that is rolled or bound into a tight tubular roll and placed on the toe and face of slopes to intercept runoff, reduce its flow velocity, release the runoff as sheet flow and provide removal of sediment from the runoff. Fiber rolls may also be used for inlet protection and as check dams under certain situations.

Fiber Rolls

SC-5

■ Appropriate Applications

This BMP may be implemented on a project-by-project basis with other BMPs when determined necessary and feasible by the RE.



■ Along the toe, top, face, and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow.

■ Below the toe of exposed and erodible slopes.

■ Fiber rolls may be used as check dams in unlined ditches if approved by the Resident Engineer (RE) or the District Construction Storm Water Coordinator (refer to SC-4 “Check Dams”).

■ Fiber rolls may be used for drain inlet protection if approved by the RE or the District Construction Storm Water Coordinator (refer to SC-10 “Storm Drain Inlet Protection”).

■ Down-slope of exposed soil areas.

■ Around temporary stockpiles.

■ Along the perimeter of a project.

Fiber Rolls

SC-5

Limitations

- Runoff and erosion may occur if fiber roll is not adequately trenched in.
- Fiber rolls at the toe of slopes greater than 1:5 may require the use of 500 mm (20" diameter) or installations achieving the same protection (i.e., stacked smaller diameter fiber rolls, etc.).
- Fiber rolls may be used for drainage inlet protection if they can be properly anchored.
- Difficult to move once saturated.
- Fiber rolls could be transported by high flows if not properly staked and trenched in.
- Fiber rolls have limited sediment capture zone.
- Do not use fiber rolls on slopes subject to creep, slumping, or landslide.

Standards and Specifications

Fiber Roll Materials ■

Fiber rolls shall be either:

(1) Prefabricated rolls.

(2) Rolled tubes of erosion control blanket.

Assembly of Field Rolled Fiber Roll

■ Roll length of erosion control blanket into a tube of minimum 200 mm (8 in) diameter.

■ Bind roll at each end and every 1.2 m (4 ft) along length of roll with jute-type twine.

Installation

■ Slope inclination of 1:4 or flatter: fiber rolls shall be placed on slopes 6.0 m apart.

■ Slope inclination of 1:4 to 1:2: fiber rolls shall be placed on slopes 4.5 m apart.

■ Slope inclination 1:2 or greater: fiber rolls shall be placed on slopes 3.0 m apart.

■ Stake fiber rolls into a 50 to 100 mm (2 to 4 in) trench.

- Drive stakes at the end of each fiber roll and spaced 600 mm (2 ft) apart if Type 2 installation is used (refer to Page 4). Otherwise, space stakes 1.2 m (4 ft) maximum on center if installed as shown on Pages 5 and 6.
- Use wood stakes with a nominal classification of 19 by 19 mm (3/4 by 3/4 in), and minimum length of 600 mm (24 in).
- If more than one fiber roll is placed in a row, the rolls shall be overlapped; not abutted.

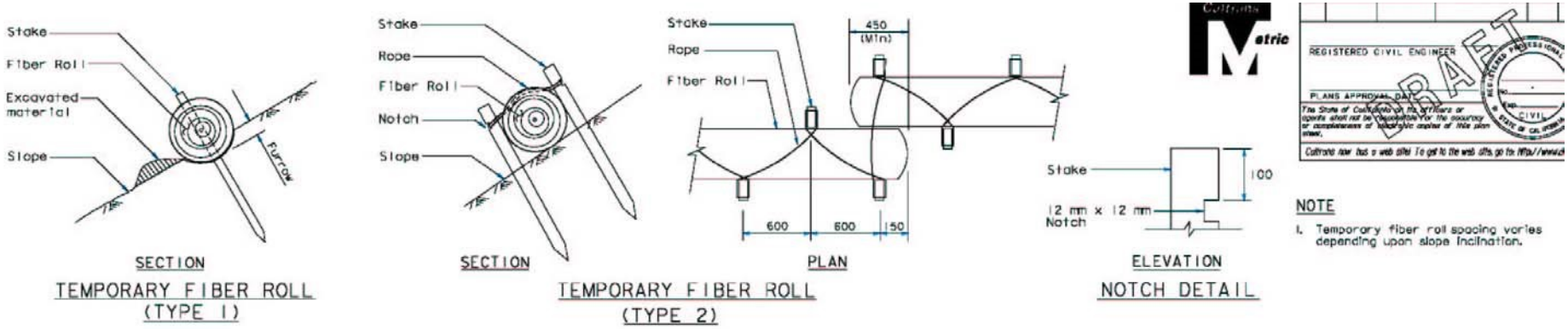
Removal

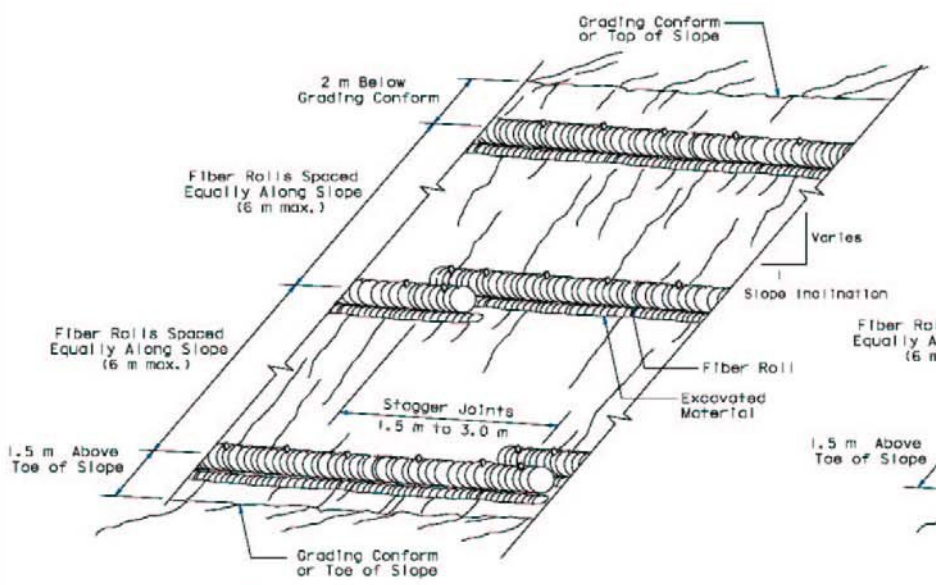
- Fiber rolls are typically left in place.
- If fiber rolls are removed, collect and dispose of sediment accumulation, and fill and compact holes, trenches, depressions or any other ground disturbance to blend with adjacent ground.

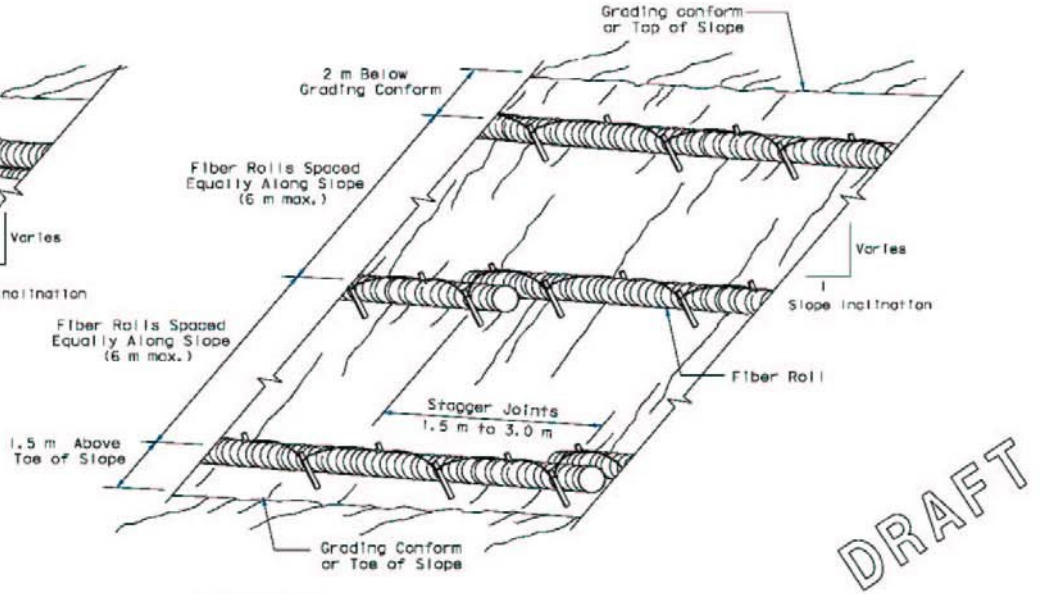
Maintenance and Inspection

- Repair or replace split, torn, unraveling, or slumping fiber rolls.
- Inspect fiber rolls when rain is forecast. Perform maintenance as needed or as required by the RE.
- Inspect fiber rolls following rainfall events and a least daily during prolonged rainfall. Perform maintenance as needed or as required by the RE.
- Maintain fiber rolls to provide an adequate sediment holding capacity. Sediment shall be removed when the sediment accumulation reaches three quarters (3/4) of the barrier height. Removed sediment shall be incorporated in the project at locations designated by the RE or disposed of outside the highway right-of-way in conformance with the Standard Specifications.

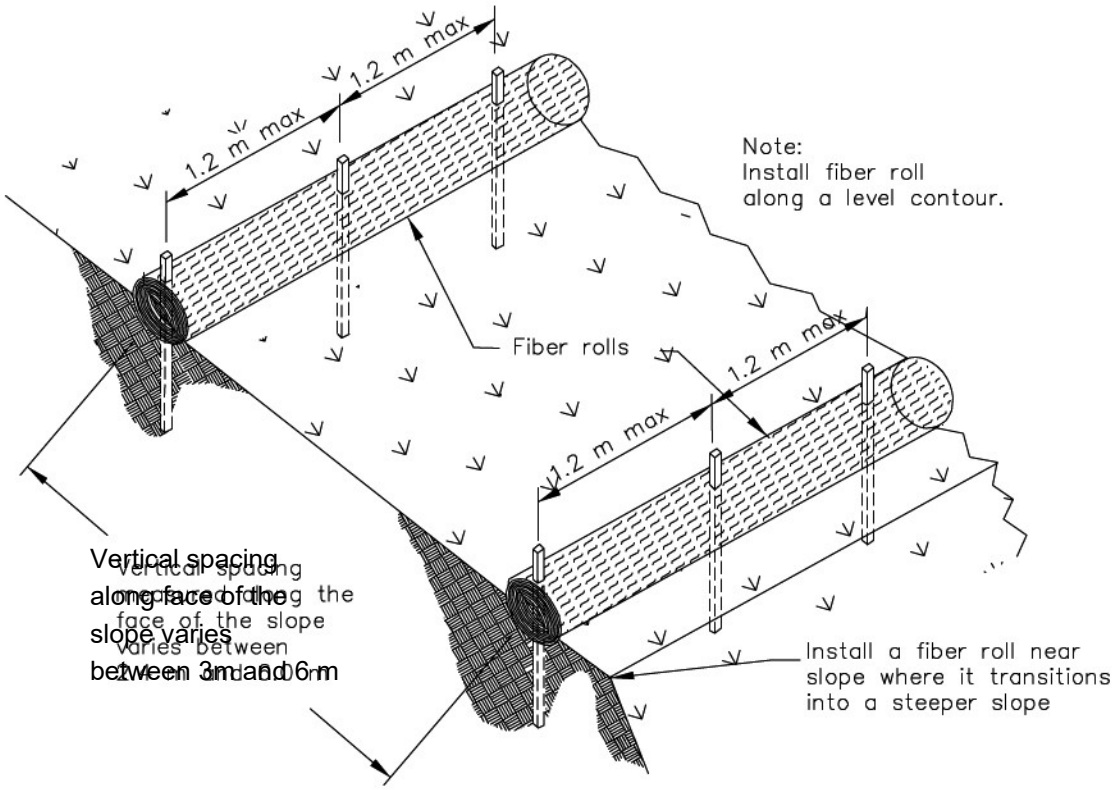
Fiber Rolls







TEMPORARY WATER POLLUTION CONTROL DETAILS



TYPICAL FIBER ROLL INSTALLATION

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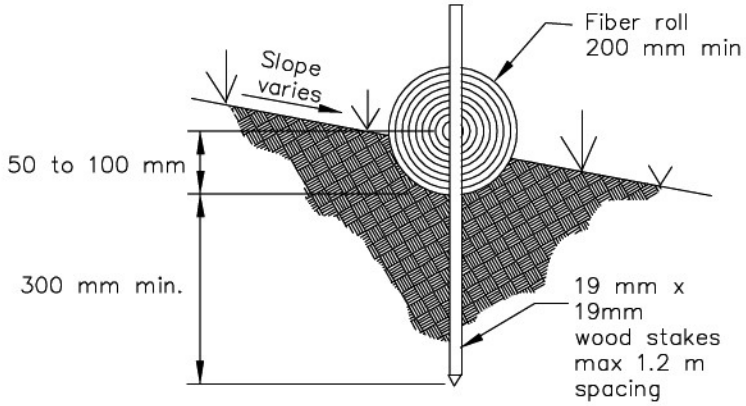
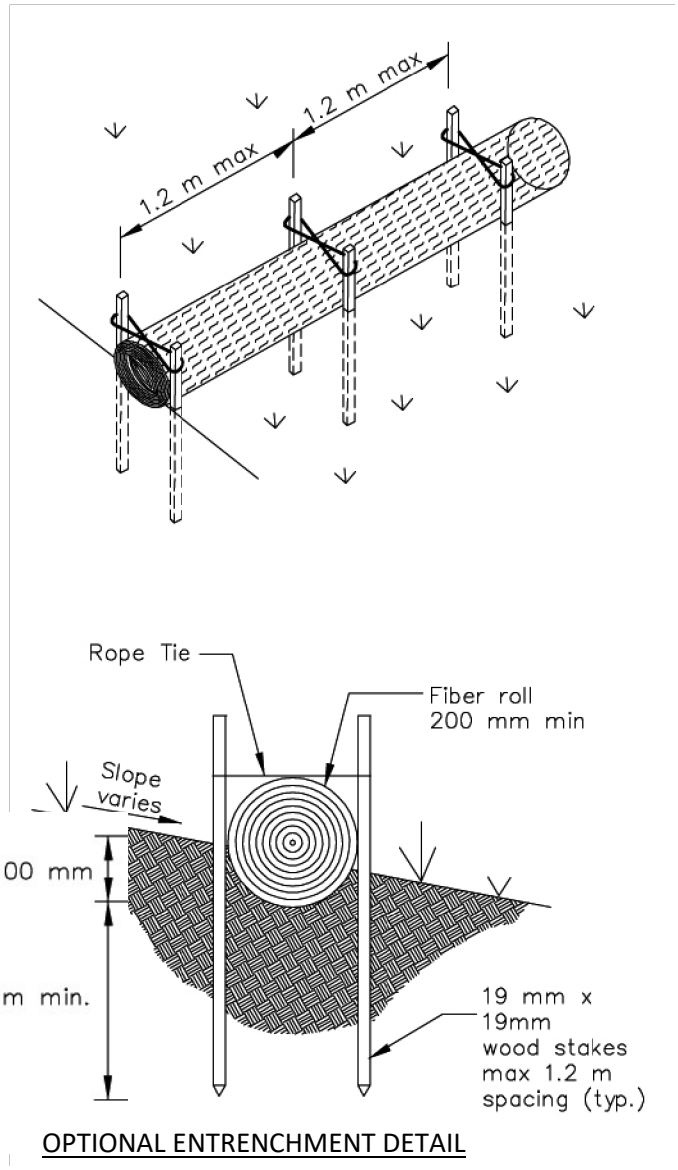


ENTRENCHMENT DETAIL

N.T.S.

N.T.S.



OPTIONAL ENTRENCHMENT DETAIL

Straw Bale Barrier

SC-9

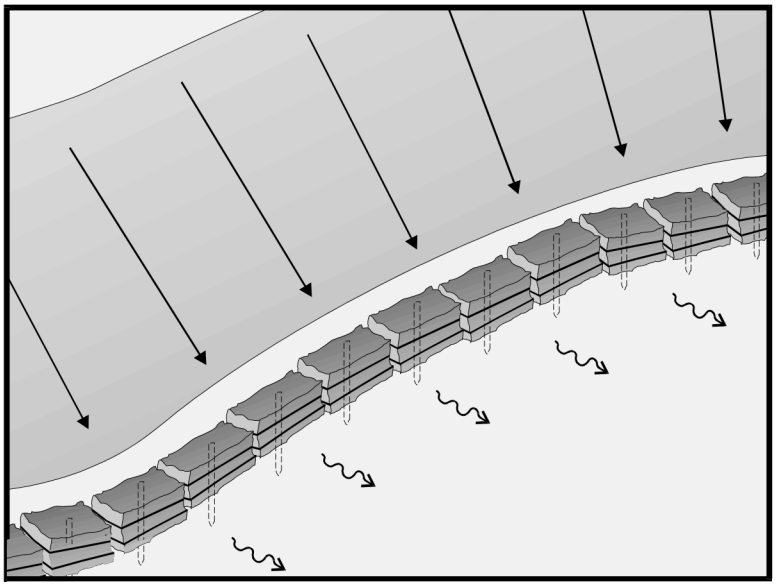
Appropriate Applications

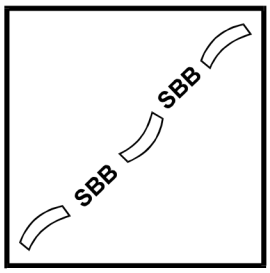
■ This BMP may be implemented on a project-by-project basis in addition to other BMPs when determined necessary and feasible by the Resident Engineer (RE).

- Along the perimeter of a site.
- Along streams and channels.
- Below the toe of exposed and erodible slopes.
- Down slope of exposed soil areas.
- Around stockpiles.
- Across minor swales or ditches with small catchments.

Definition and Purpose

A straw bale barrier is a temporary linear sediment barrier consisting of straw bales, designed to intercept and slow sediment-laden sheet flow runoff. Straw bale barriers allow sediment to settle from runoff before water leaves the construction site.





Standard Symbol

BMP Objectives

- ○ Soil Stabilization
- ● Sediment Control
- ○ Tracking Control
- ○ Wind Erosion Control
- ○ Non-Storm Water Management
- ○ Materials and Waste Management

- Around above grade type temporary concrete washouts (See BMP WM-8, "Concrete Waste Management").
- Parallel to a roadway to keep sediment off paved areas.

Limitations

- Installation can be labor intensive.
- Straw bale barriers are maintenance intensive.
- Degraded straw bales may fall apart when removed or left in place for extended periods.
- Can't be used on paved surfaces.
- Not to be used for drain inlet protection.
- Shall not be used in areas of concentrated flow.
- Can be an attractive food source for some animals.
- May introduce undesirable non-native plants to the area.

Standards and Specifications

Materials

- ***Straw Bale Material:*** Straw bale materials shall conform to the provisions in Standard Specifications Section 20-2.06, "Straw."
- Straw Bale Size: Each straw bale shall be a minimum of 360 mm (14 in) wide, 450 mm (18 in) in height, 900 mm (36 in) in length and shall have a minimum mass of 23 kg (51 lb.) The straw bale shall be composed entirely of vegetative matter, except for the binding material.

- Bale Bindings: Bales shall be bound by either steel wire, nylon or polypropylene string placed horizontally. Jute and cotton binding shall not be used. Baling wire shall be a minimum diameter of 1.57 mm (0.06 inch). Nylon or polypropylene string shall be approximately 2 mm (0.08 inch) in diameter with a breaking strength of 360 N.
- Stakes: Wood stakes shall be commercial quality lumber of the size and shape shown on the plans. Each stake shall be free from decay, splits or cracks longer than the thickness of the stake, or other defects that would weaken the stakes and cause the stakes to be structurally unsuitable. Steel bar reinforcement shall be equal to a number four designation or greater. End protection shall be provided for any exposed bar reinforcement.

Installation

- Limit the drainage area upstream of the barrier to 0.3 ha/100 m (0.25 ac/100ft) or barrier.
- Limit the slope length draining to the straw bale barrier to 30 m (100 ft.)
- Slopes of 2:100 (V:H) (2%) or flatter are preferred. If the slope exceeds 1:10 (V:H) (10%), the length of slope upstream of the barrier must be less than 15 m (50 ft).
- Install straw bale barriers along a level contour, with the last straw bale turned up slope.
- Straw bales must be installed in a trench and tightly abut adjacent bales.

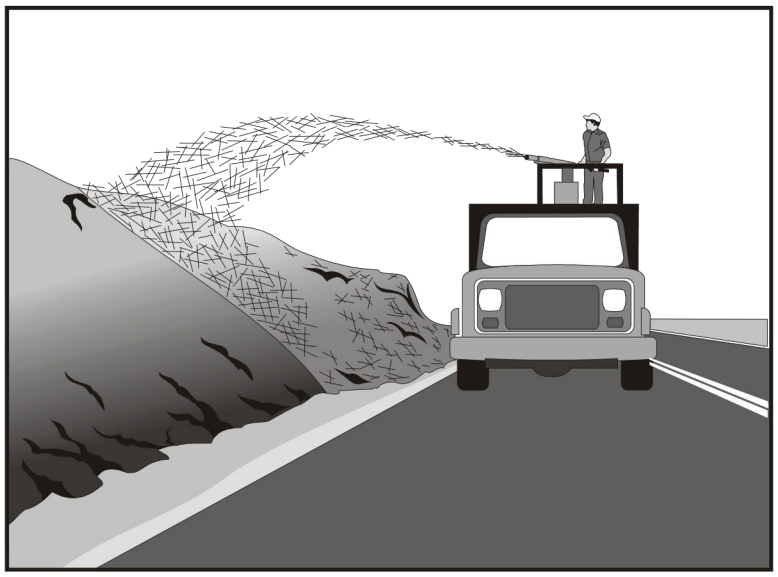
- Construct straw bale barriers with a set-back of at least 1 m (3 ft) from the toe of a slope. Where it is determined to be not practical due to specific site conditions, the straw bale barrier may be constructed at the toe of the slope, but shall be constructed as far from the toe of the slope as practical.
- See pages 4 and 5 of this BMP for installation detail.

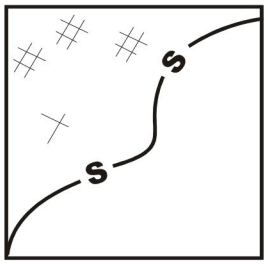
Maintenance and Inspection

- Inspect straw bale barriers before and after each rainfall event, and weekly throughout the rainy season.
- Inspect straw bale barriers for sediment accumulations and remove sediment when depth reaches one-third the barrier height. Removed sediment shall be incorporated in the project at locations designated by the RE or disposed of outside the highway right-of-way in conformance with the Standard Specifications.
- Replace or repair damage bales as needed or as directed by the RE.
- Repair washouts or other damages as needed or as directed by the RE.
- Remove straw bales when no longer needed. Remove sediment accumulation, and clean, re-grade, and stabilized the area.

Straw Mulch

SS-6





Standard Symbol

BMP Objectives

- ● Soil Stabilization
- ○ Sediment Control
- ○ Tracking Control
- ● Wind Erosion Control
- ○ Non-Storm Water Management
- ○ Materials and Waste Management

Definition and Purpose

Straw mulch consists of placing a uniform layer of straw and incorporating it into the soil with a studded roller or anchoring it with a stabilizing emulsion. This is one of five temporary soil stabilization alternatives to consider.

Appropriate Applications

- Straw mulch is typically used for soil stabilization as a temporary surface cover on disturbed areas until soils can be prepared for revegetation and permanent vegetation is established.
- Also typically used in combination with temporary and/or permanent seeding strategies to enhance plant establishment.

Limitations

- Availability of erosion control contractors and straw may be limited prior to the rainy season due to high demand.
- There is a potential for introduction of weed-seed and unwanted plant material.
- When straw blowers are used to apply straw mulch, the treatment areas must be within 45 m (150 ft) of a road or surface capable of supporting trucks.
- Straw mulch applied by hand is more time intensive and potentially costly.
- May have to be removed prior to permanent seeding or soil stabilization.
- “Punching” of straw does not work in sandy soils.

Straw Mulch

SS-6

Standards and Specifications

- Straw shall be derived from wheat, rice, or barley.
- All materials shall conform to Standard Specifications Sections 20-2.06, 20-2.07 and 20-2.11.
- A tackifier is the preferred method for anchoring straw mulch to the soil on slopes.
- Crimping, punch roller-type rollers, or track-walking may also be used to incorporate straw mulch into the soil on slopes. Track walking shall only be used where other methods are impractical.
- Avoid placing straw onto the traveled way, sidewalks, lined drainage channels, sound walls, and existing vegetation.
- Straw mulch with tackifier shall not be applied during or immediately before rainfall.

Application Procedures

- Apply loose straw at a minimum rate of 3,570 kg/ha (4,000 lb/ac), or as indicated in the project's special provisions, either by machine or by hand distribution.
- If stabilizing emulsion will be used to anchor the straw mulch in lieu of incorporation, roughen embankment or fill areas by rolling with a crimping or punching-type roller or by track walking before placing the straw mulch. Track walking should only be used where rolling is impractical.
- The straw mulch must be evenly distributed on the soil surface.
- Anchor the mulch in place by using a tackifier or by "punching" it into the soil mechanically (incorporating).
- A tackifier acts to glue the straw fibers together and to the soil surface. The tackifier shall be selected based on longevity and ability to hold the fibers in place.
- A tackifier is typically applied at a rate of 140 kg/ha (125 lb/ac). In windy conditions, the rates are typically 200 kg/ha (178 lb/ac).
- Methods for holding the straw mulch in place depend upon the slope steepness, accessibility, soil conditions and longevity. If the selected method is incorporation of straw mulch into the soil, then do as follows:
  - Applying and incorporating straw shall follow the requirements in Standard Specifications Section 20-3.03.
  - On small areas, a spade or shovel can be used.

- On slopes with soils, which are stable enough and of sufficient gradient to safely support construction equipment without contributing to compaction and instability problems, straw can be "punched" into the ground using a knife-blade roller or a straight bladed coulter, known commercially as a "crimper."

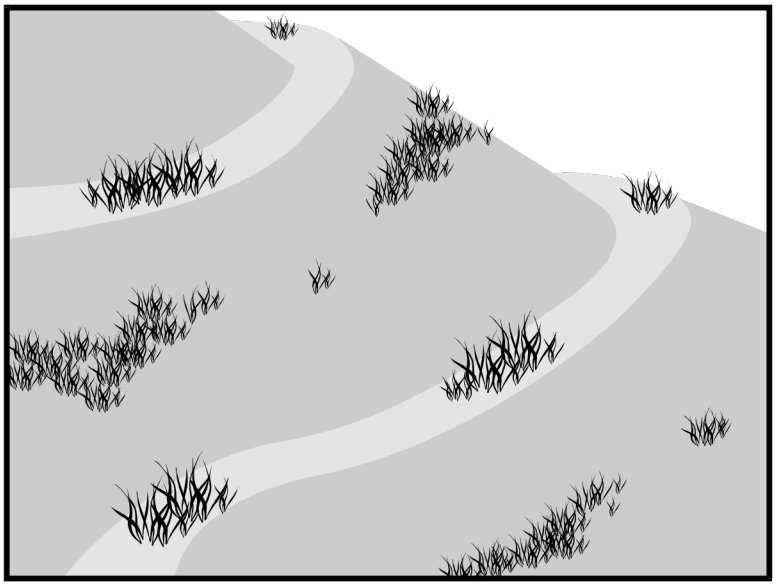
- On small areas and/or steep slopes, straw can also be held in place using plastic netting or jute. The netting shall be held in place using 11 gauge wire staples, geotextile pins or wooden stakes. Refer to BMP SS-7, "Geotextiles, Plastic Covers and Erosion Control Blankets/Mats."

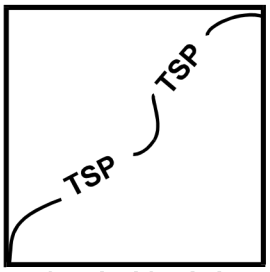
Maintenance and Inspections

- The key consideration in Maintenance and Inspection is that the straw needs to last long enough to achieve erosion control objectives.
- Maintain an unbroken, temporary mulched ground cover while DSAs are non-active. Repair any damaged ground cover and re-mulch exposed areas.
- Reapplication of straw mulch and tackifier may be required by the Resident Engineer (RE) to maintain effective soil stabilization over disturbed areas and slopes.
- After any rainfall event, the Contractor is responsible for maintaining all slopes to prevent erosion.

Hydroseeding

SS-4





Standard Symbol

BMP Objectives

- ● Soil Stabilization
- ○ Sediment Control
- ○ Tracking Control
- ● Wind Erosion Control
- ○ Non-Storm Water Management
- ○ Materials and Waste Management

Definition and Purpose

Hydroseeding typically consists of applying a mixture of wood fiber, seed, fertilizer, and stabilizing emulsion with hydro-mulch equipment, which temporarily protects exposed soils from erosion by water and wind. This is one of five temporary soil stabilization alternatives to consider.

Appropriate Applications

Hydroseeding is applied on disturbed soil areas requiring temporary protection until permanent vegetation is established or disturbed soil areas that must be re-disturbed following an extended period of inactivity.

Limitations

season to ensure adequate vegetation establishment and erosion control. Otherwise, hydroseeding must be used in conjunction with a soil binder or mulching (i.e., straw mulch), refer to BMP SS-5, Table 1 for options.

- Steep slopes are difficult to protect with temporary seeding.
- Temporary seeding may not be appropriate in dry periods without supplemental irrigation.
- Temporary vegetation may have to be removed before permanent vegetation is applied.
- Temporary vegetation is not appropriate for short-term inactivity.
- Hydroseeding may be used alone only when there is sufficient time in the

Hydroseeding

SS-4

Standards and Specifications

To select appropriate hydroseeding mixtures, an evaluation of site conditions shall be performed with respect to:

- Soil conditions
- Site topography
- Season and climate availability
- Vegetation types
- Maintenance
- Sensitive
- Water
- Plans for permanent vegetation

- Selection of hydroseeding mixtures shall be approved by the District Landscape Architect and the Construction Storm Water Coordinator.

The following steps shall be followed for implementation:

- Seed mix shall comply with the Standard Specifications Section 20-2.10, and the project's special provisions.
- Hydroseeding can be accomplished using a multiple-step or one-step process; refer to the special provisions for specified process. The multiple-step process ensures maximum direct contact of the seeds to soil. When the onestep process is used to apply the mixture of fiber, seed, etc., the seed rate shall be increased to compensate for all seeds not having direct contact with the soil.
- Prior to application, roughen the slope, fill area, or area to be seeded with the furrows trending along the contours. Rolling with a crimping or punching type roller or track walking is required on all slopes prior to hydroseeding.
  Track walking shall only be used where other methods are impractical.
- Apply a straw mulch to keep seeds in place and to moderate soil moisture and temperature until the seeds germinate and grow, refer to Standard Specifications Sections 20-2.06 and 20-3.03.
- All seeds shall be in conformance with the California State Seed Law of the Department of Agriculture. Each seed bag shall be delivered to the site sealed and clearly marked as to species, purity, percent germination, dealer's guarantee, and dates of test; provide the Resident Engineer (RE) with such documentation. The container shall be labeled to clearly reflect the amount of Pure Live Seed (PLS) contained. All legume seed shall be pellet-inoculated. Inoculant sources shall be species-specific and shall be applied at a rate of 2 kg of inoculant per 100 kg of seed (2-lb inoculant per 100-lb seed), refer to Standard Specifications Section 20-2.10.

- Commercial fertilizer shall conform to the requirements of the California Food and Agricultural Code. Fertilizer shall be pelleted or granular form.

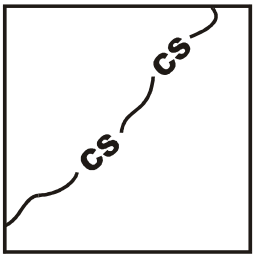
- Follow-up applications shall be made as needed to cover weak spots, and to maintain adequate soil protection.
- Avoid over-spray onto the traveled way, sidewalks, lined drainage channels, and existing vegetation.

Maintenance and Inspection

- All seeded areas shall be inspected for failures and re-seeded, fertilized, and mulched within the planting season, using not less than half the original application rates. Any temporary revegetation efforts that do not provide adequate cover must be reapplied at a scheduled recommended by the Caltrans Landscape Architect or RE.
- After any rainfall event, the Contractor is responsible for maintaining all slopes to prevent erosion.

Stockpile Management

WM-3



Standard Symbol

BMP Objectives

- ● Soil Stabilization
- ● Sediment Control
- ○ Tracking Control
- ○ Wind Erosion Control
- ○ Non-Storm Water Management
- ● Materials and Waste Management

Definition and Purpose

Stockpile management procedures and practices are designed to reduce or eliminate air and storm water pollution from stockpiles of soil, and paving materials such as portland cement concrete (PCC) rubble, asphalt concrete (AC), asphalt concrete rubble, aggregate base, aggregate subbase or pre-mixed aggregate, asphalt binder (so called “cold mix” asphalt) and pressure treated wood.

Appropriate Applications

Implemented in all projects that stockpile soil and other materials.

Limitations

- None identified

Standards and Specifications

- Protection of stockpiles is a year-round requirement.
- Locate stockpiles a minimum of 15 m (50 ft)away from concentrated flows of storm water, drainage courses, and inlets.
- Implement wind erosion control practices as appropriate on all stockpiled material. For specific information see BMP WE-1, “Wind Erosion Control.”
- Stockpiles of contaminated soil shall be managed in accordance with BMP WM-7, “Contaminated Soil Management.”
- Bagged materials should be placed on pallets and under cover.

Protection of Non-Active Stockpiles

Non-active stockpiles of the identified materials shall be protected further as follows:

- ***Soil stockpiles:***
  - During the rainy seasons, soil stockpiles shall be covered or protected with soil stabilization measures and a temporary perimeter sediment barrier at all times.
  - During the non-rainy season, soil stockpiles shall be covered and protected with a temporary perimeter sediment barrier prior to the onset of precipitation.
- ***Stockpiles of portland cement concrete rubble, asphalt concrete, asphalt concrete rubble, aggregate base, or aggregate subbase:***
  - During the rainy season, the stockpiles shall be covered or protected with a temporary perimeter sediment barrier at all times.
  - During the non-rainy season, the stockpiles shall be covered or protected with a temporary perimeter sediment barrier prior to the onset of precipitation.
- ***Stockpiles of "cold mix":***
  - During the rainy season, cold mix stockpiles shall be placed on and covered with plastic or comparable material at all times.
  - During the non-rainy season, cold mix stockpiles shall be placed on and covered with plastic or comparable material prior to the onset of precipitation.
- ***Stockpiles/Storage of pressure treated wood with copper, chromium, and arsenic or ammonical, copper, zinc, and arsenate:***
  - During the rainy season, treated wood shall be covered with plastic or comparable material at all times.
  - During the non-rainy season, treated wood shall be covered with plastic or comparable material and shall be placed on pallets prior to the onset of precipitation.

Protection of Active Stockpiles

Active stockpiles of the identified materials shall be protected further as follows:

- All stockpiles shall be covered, stabilized, or protected with a temporary linear sediment barrier prior to the onset of precipitation.

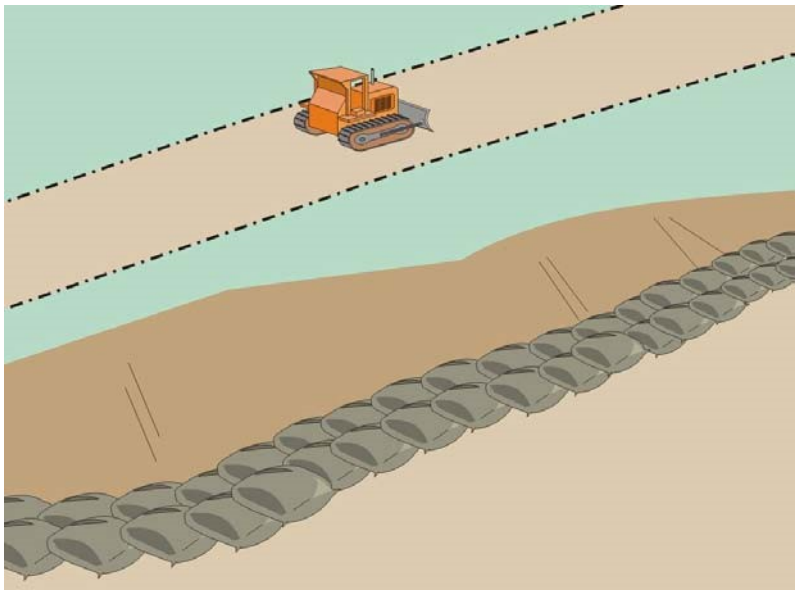
- Stockpiles of "cold mix" shall be placed on and covered with plastic or comparable material prior to the onset of precipitation.

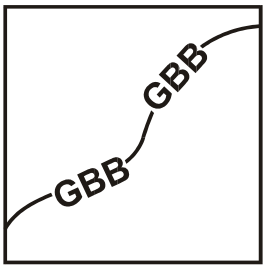
Maintenance and Inspections

- Repair and/or replace perimeter controls and covers as needed, or as directed by the RE, to keep them functioning properly. Sediment shall be removed when sediment accumulation reaches one-third (1/3) of the barrier height.

Gravel Bag Berm

SC-6





Standard Symbol

BMP Objectives

- ○ Soil Stabilization
- ● Sediment Control
- ○ Tracking Control
- ○ Wind Erosion Control
- ○ Non-Storm Water Management
- ○ Materials and Waste Management

Appropriate Applications

Definition and Purpose

A gravel bag berm consists of a single row of gravel bags that are installed end to end to form a barrier across a slope to intercept runoff, reduce its flow velocity, release the runoff as sheet flow and provide some sediment removal. Gravel bags can be used where flows are moderately concentrated, such as ditches, swales, and storm drain inlets (see BMP SC-10, Storm Drain Inlet Protection) to divert and/or detain flows.

- BMP may be implemented on a project-by-project basis with other BMPs when determined necessary and feasible by the RE.
  - Along streams and channels.
  - Below the toe of exposed and erodible slopes.
  - Down slope of exposed soil areas.
  - Around stockpiles.

Gravel Bag Berm

SC-6

- Across channels to serve as a barrier for utility trenches or provide a temporary channel crossing for construction equipment, to reduce stream impacts.
- Parallel to a roadway to keep sediment off paved areas.
- At the top of slopes to divert roadway runoff away from disturbed slopes.
- Along the perimeter of a site.
- To divert or direct flow or create a temporary sediment basin.
- During construction activities in stream beds when the contributing drainage area is less than 2 ha (5 ac).
- When extended construction period limits the use of either silt fences or straw bale barriers.
- When site conditions or construction sequencing require adjustments or relocation of the barrier to meet changing field conditions and needs during construction.
- At grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow.

Limitations

- Degraded gravel bags may rupture when removed, spilling contents.
- Installation can be labor intensive.
- Limited durability for long term projects.
- When used to detain concentrated flows, maintenance requirements increase.

Gravel Bag Berm

SC-6

Standards and Specifications

Materials

- Bag Material: Bags shall be woven polypropylene, polyethylene or polyamide fabric, minimum unit weight 135 g/m2 (four ounces per square yard), mullen burst strength exceeding 2,070 kPa (300 psi) in conformance with the requirements in ASTM designation D3786, and ultraviolet stability exceeding 70% in conformance with the requirements in ASTM designation D4355.
- Bag Size: Each gravel-filled bag shall have a length of 450 mm (18 in), width of 300 mm (12 in), thickness of 75 mm (3 in), and mass of approximately 15 kg (33 lb). Bag dimensions are nominal, and may vary based on locally available materials. Alternative bag sizes shall be submitted to the RE for approval prior to deployment.
- Fill Material: Gravel shall be between 10 mm and 20 mm (0.4 and 0.8 inch) in diameter, and shall be clean and free from clay balls, organic matter, and other deleterious materials. The opening of gravel-filled bags shall be between 13 kg and 22 kg (28 and 48 lb) in mass. Fill material is subject to approval by the RE.

Installation

- When used as a linear control for sediment removal:
  - Install along a level contour.
  - Turn ends of gravel bag row up slope to prevent flow around the ends.
  - Generally, gravel bag barriers shall be used in conjunction with temporary soil stabilization controls up slope to provide effective erosion and sediment control.
- When used for concentrated flows:
  - Stack gravel bags to required height using a pyramid approach.
  - Upper rows of gravel bags shall overlap joints in lower rows.
- Construct gravel bag barriers with a set-back of at least 1m from the toe of a slope. Where it is determined to be not practicable due to specific site conditions, the gravel bag barrier may be constructed at the toe of the slope, but shall be constructed as far from the toe of the slope as practicable.
- Requires Certificate of Compliance per Standard Specifications 6-1.07.

Maintenance and Inspection

- Inspect gravel bag berms before and after each rainfall event, and weekly throughout the rainy season.

- Reshape or replace gravel bags as needed, or as directed by the RE.
- Repair washouts or other damages as needed, or as directed by the RE.
- Inspect gravel bag berms for sediment accumulations and remove sediments when accumulation reaches one-third of the berm height. Removed sediment shall be incorporated in the project at locations designated by the RE or disposed of outside the highway right-of-way in conformance with the Standard Specifications.
- Remove gravel bag berms when no longer needed. Remove sediment accumulations and clean, re-grade, and stabilize the area.

Fiber Rolls

SC-5

BMP Objectives

- ● Soil Stabilization
- ● Sediment Control
- ○ Tracking Control
- ○ Wind Erosion Control
- ○ Non-Storm Water Management
- ○ Materials and Waste Management

Standard Symbol

Definition and Purpose

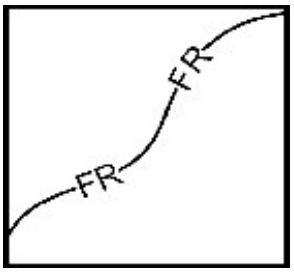
A fiber roll consists of wood excelsior, rice or wheat straw, or coconut fibers that is rolled or bound into a tight tubular roll and placed on the toe and face of slopes to intercept runoff, reduce its flow velocity, release the runoff as sheet flow and provide removal of sediment from the runoff. Fiber rolls may also be used for inlet protection and as check dams under certain situations.

Fiber Rolls

SC-5

■ Appropriate Applications

This BMP may be implemented on a project-by-project basis with other BMPs when determined necessary and feasible by the RE.



■ Along the toe, top, face, and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow.

■ Below the toe of exposed and erodible slopes.

■ Fiber rolls may be used as check dams in unlined ditches if approved by the Resident Engineer (RE) or the District Construction Storm Water Coordinator (refer to SC-4 “Check Dams”).

■ Fiber rolls may be used for drain inlet protection if approved by the RE or the District Construction Storm Water Coordinator (refer to SC-10 “Storm Drain Inlet Protection”).

■ Down-slope of exposed soil areas.

■ Around temporary stockpiles.

■ Along the perimeter of a project.

Fiber Rolls

SC-5

Limitations

- Runoff and erosion may occur if fiber roll is not adequately trenched in.
- Fiber rolls at the toe of slopes greater than 1:5 may require the use of 500 mm (20" diameter) or installations achieving the same protection (i.e., stacked smaller diameter fiber rolls, etc.).
- Fiber rolls may be used for drainage inlet protection if they can be properly anchored.
- Difficult to move once saturated.
- Fiber rolls could be transported by high flows if not properly staked and trenched in.
- Fiber rolls have limited sediment capture zone.
- Do not use fiber rolls on slopes subject to creep, slumping, or landslide.

Standards and Specifications

Fiber Roll Materials ■

Fiber rolls shall be either:

(1) Prefabricated rolls.

(2) Rolled tubes of erosion control blanket.

Assembly of Field Rolled Fiber Roll

■ Roll length of erosion control blanket into a tube of minimum 200 mm (8 in) diameter.

■ Bind roll at each end and every 1.2 m (4 ft) along length of roll with jute-type twine.

Installation

■ Slope inclination of 1:4 or flatter: fiber rolls shall be placed on slopes 6.0 m apart.

■ Slope inclination of 1:4 to 1:2: fiber rolls shall be placed on slopes 4.5 m apart.

■ Slope inclination 1:2 or greater: fiber rolls shall be placed on slopes 3.0 m apart.

■ Stake fiber rolls into a 50 to 100 mm (2 to 4 in) trench.

- Drive stakes at the end of each fiber roll and spaced 600 mm (2 ft) apart if Type 2 installation is used (refer to Page 4). Otherwise, space stakes 1.2 m (4 ft) maximum on center if installed as shown on Pages 5 and 6.
- Use wood stakes with a nominal classification of 19 by 19 mm (3/4 by 3/4 in), and minimum length of 600 mm (24 in).
- If more than one fiber roll is placed in a row, the rolls shall be overlapped; not abutted.

Removal

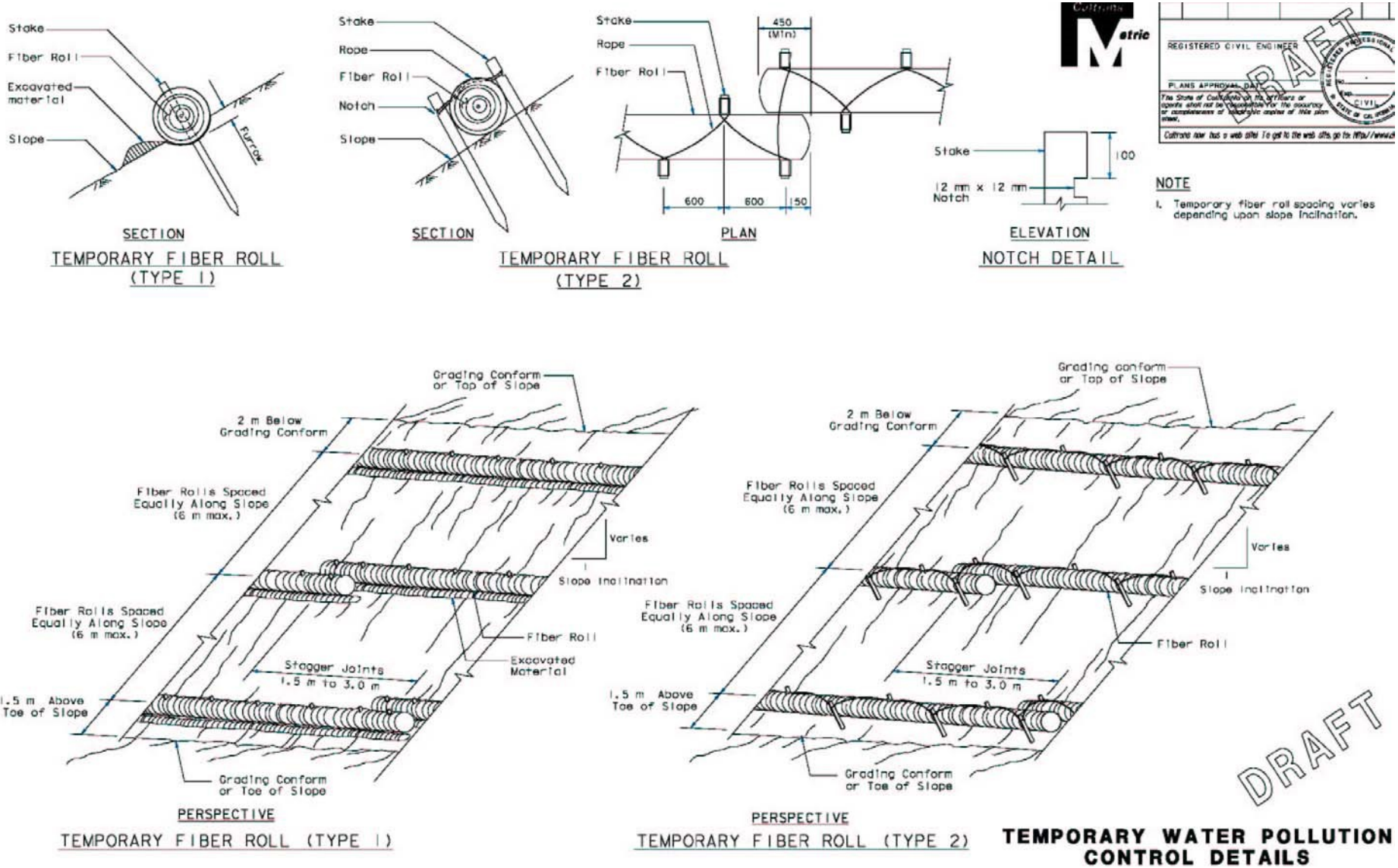
- Fiber rolls are typically left in place.
- If fiber rolls are removed, collect and dispose of sediment accumulation, and fill and compact holes, trenches, depressions or any other ground disturbance to blend with adjacent ground.

Maintenance and Inspection

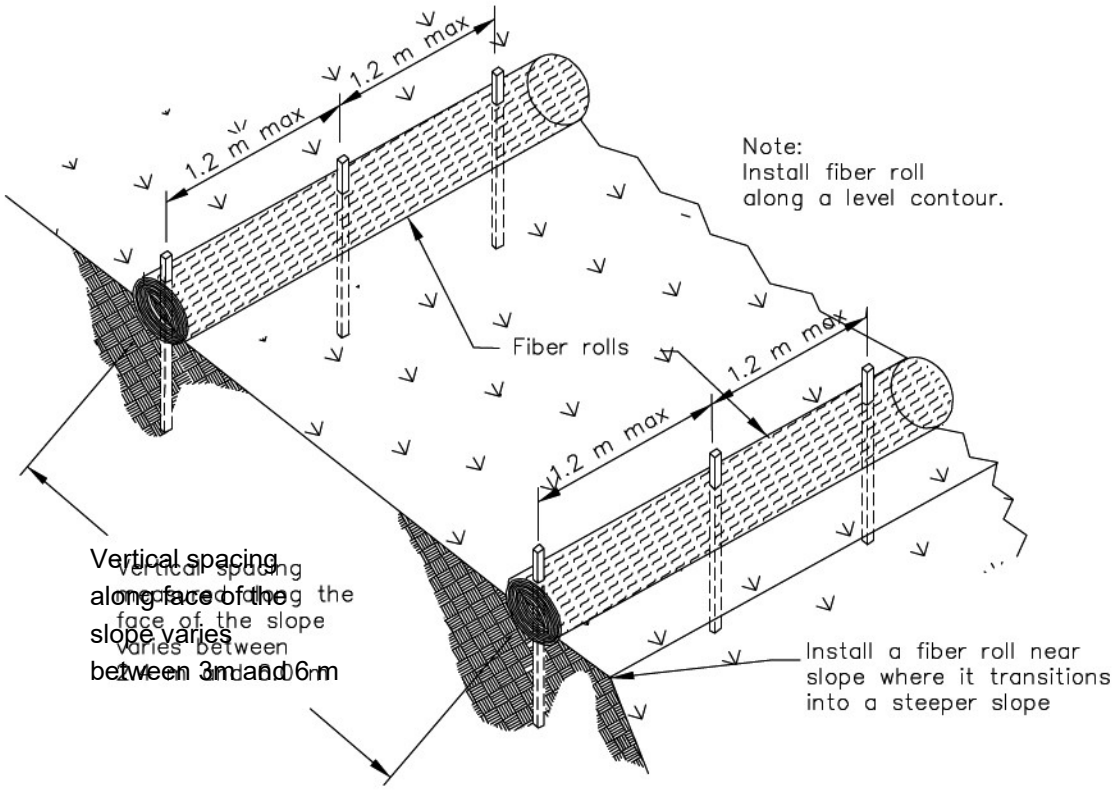
- Repair or replace split, torn, unraveling, or slumping fiber rolls.
- Inspect fiber rolls when rain is forecast. Perform maintenance as needed or as required by the RE.
- Inspect fiber rolls following rainfall events and a least daily during prolonged rainfall. Perform maintenance as needed or as required by the RE.
- Maintain fiber rolls to provide an adequate sediment holding capacity. Sediment shall be removed when the sediment accumulation reaches three quarters (3/4) of the barrier height. Removed sediment shall be incorporated in the project at locations designated by the RE or disposed of outside the highway right-of-way in conformance with the Standard Specifications.

SC-5

Fiber Rolls



TEMPORARY WATER POLLUTION CONTROL DETAILS



TYPICAL FIBER ROLL INSTALLATION

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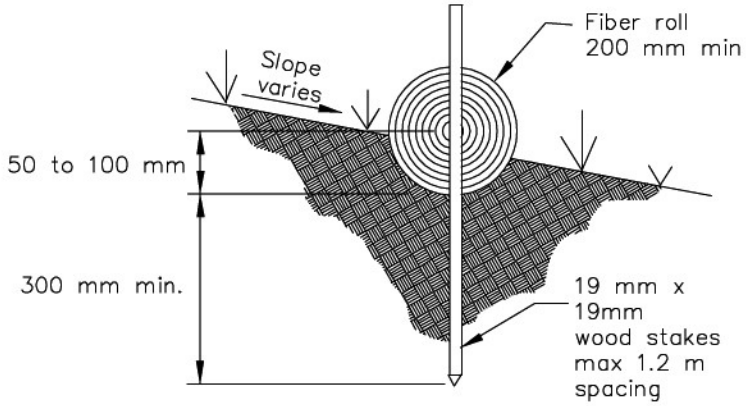

ENTRENCHMENT DETAIL

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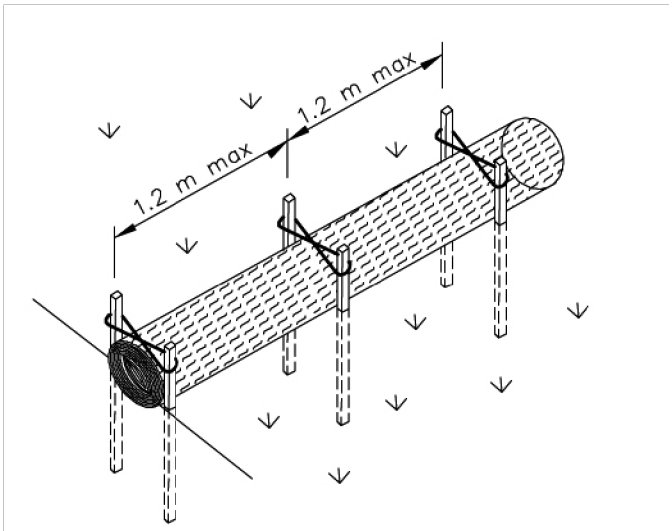
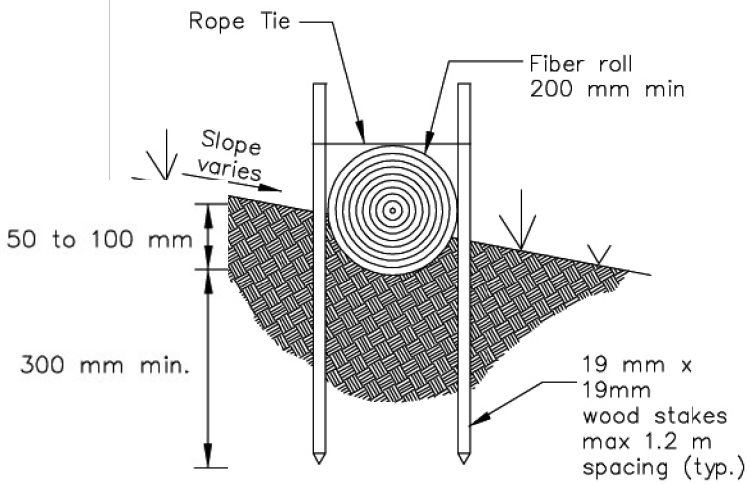




OPTIONAL ENTRENCHMENT DETAIL

Straw Bale Barrier

SC-9

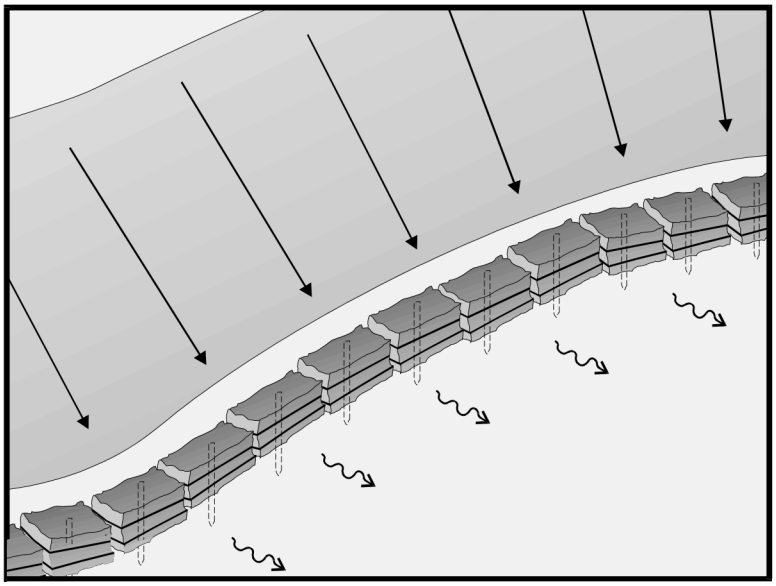
Appropriate Applications

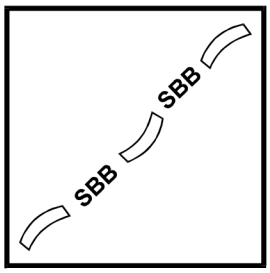
■ This BMP may be implemented on a project-by-project basis in addition to other BMPs when determined necessary and feasible by the Resident Engineer (RE).

- Along the perimeter of a site.
- Along streams and channels.
- Below the toe of exposed and erodible slopes.
- Down slope of exposed soil areas.
- Around stockpiles.
- Across minor swales or ditches with small catchments.

Definition and Purpose

A straw bale barrier is a temporary linear sediment barrier consisting of straw bales, designed to intercept and slow sediment-laden sheet flow runoff. Straw bale barriers allow sediment to settle from runoff before water leaves the construction site.





Standard Symbol

BMP Objectives

- ○ Soil Stabilization
- ● Sediment Control
- ○ Tracking Control
- ○ Wind Erosion Control
- ○ Non-Storm Water Management
- ○ Materials and Waste Management

- Around above grade type temporary concrete washouts (See BMP WM-8, "Concrete Waste Management").
- Parallel to a roadway to keep sediment off paved areas.

Limitations

- Installation can be labor intensive.
- Straw bale barriers are maintenance intensive.
- Degraded straw bales may fall apart when removed or left in place for extended periods.
- Can't be used on paved surfaces.
- Not to be used for drain inlet protection.
- Shall not be used in areas of concentrated flow.
- Can be an attractive food source for some animals.
- May introduce undesirable non-native plants to the area.

Standards and Specifications

Materials

- ***Straw Bale Material:*** Straw bale materials shall conform to the provisions in Standard Specifications Section 20-2.06, "Straw."
- Straw Bale Size: Each straw bale shall be a minimum of 360 mm (14 in) wide, 450 mm (18 in) in height, 900 mm (36 in) in length and shall have a minimum mass of 23 kg (51 lb.) The straw bale shall be composed entirely of vegetative matter, except for the binding material.

- Bale Bindings: Bales shall be bound by either steel wire, nylon or polypropylene string placed horizontally. Jute and cotton binding shall not be used. Baling wire shall be a minimum diameter of 1.57 mm (0.06 inch). Nylon or polypropylene string shall be approximately 2 mm (0.08 inch) in diameter with a breaking strength of 360 N.
- Stakes: Wood stakes shall be commercial quality lumber of the size and shape shown on the plans. Each stake shall be free from decay, splits or cracks longer than the thickness of the stake, or other defects that would weaken the stakes and cause the stakes to be structurally unsuitable. Steel bar reinforcement shall be equal to a number four designation or greater. End protection shall be provided for any exposed bar reinforcement.

Installation

- Limit the drainage area upstream of the barrier to 0.3 ha/100 m (0.25 ac/100ft) or barrier.
- Limit the slope length draining to the straw bale barrier to 30 m (100 ft.)
- Slopes of 2:100 (V:H) (2%) or flatter are preferred. If the slope exceeds 1:10 (V:H) (10%), the length of slope upstream of the barrier must be less than 15 m (50 ft).
- Install straw bale barriers along a level contour, with the last straw bale turned up slope.
- Straw bales must be installed in a trench and tightly abut adjacent bales.

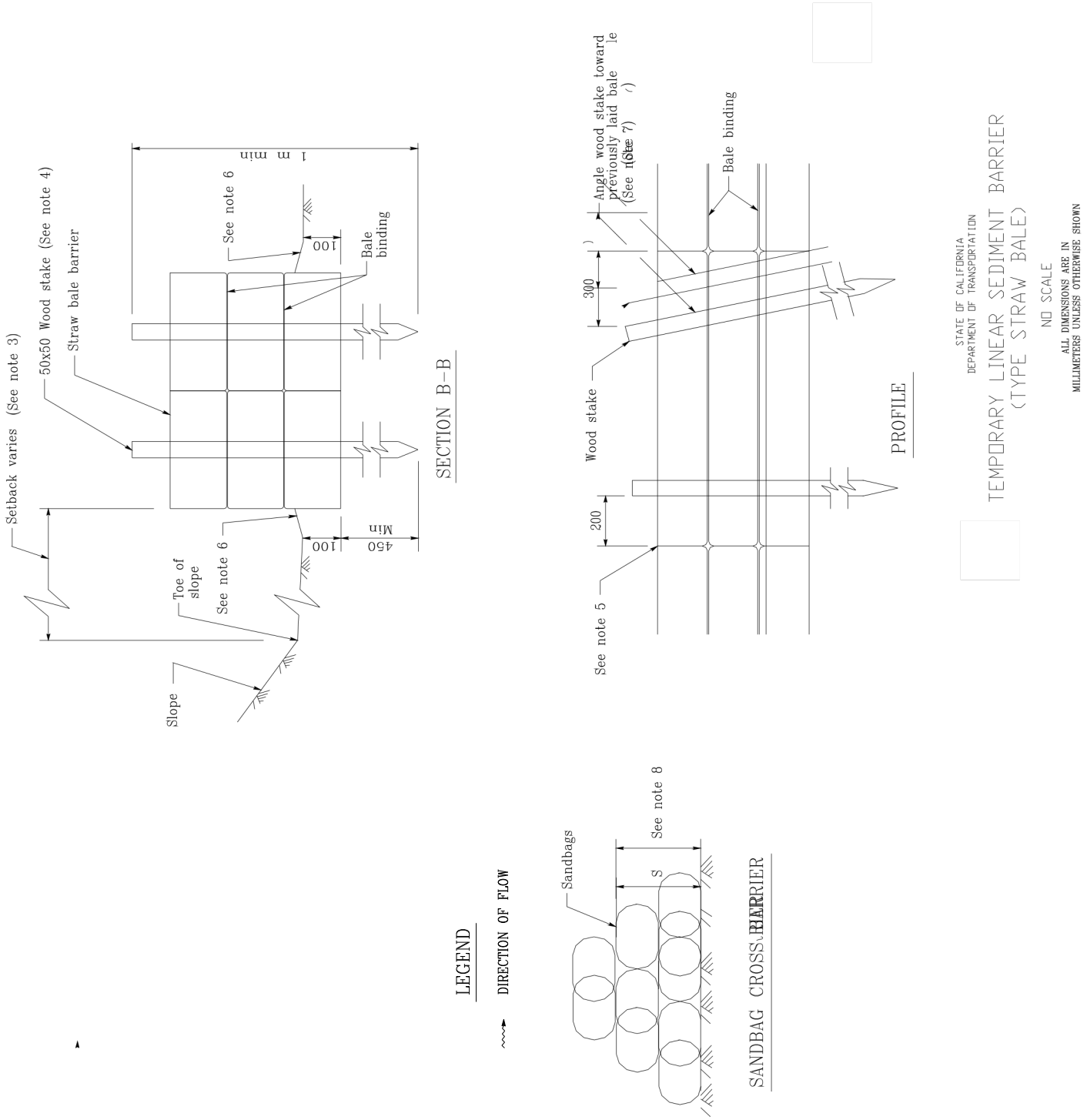
- Construct straw bale barriers with a set-back of at least 1 m (3 ft) from the toe of a slope. Where it is determined to be not practical due to specific site conditions, the straw bale barrier may be constructed at the toe of the slope, but shall be constructed as far from the toe of the slope as practical.
- See pages 4 and 5 of this BMP for installation detail.

Maintenance and Inspection

- Inspect straw bale barriers before and after each rainfall event, and weekly throughout the rainy season.
- Inspect straw bale barriers for sediment accumulations and remove sediment when depth reaches one-third the barrier height. Removed sediment shall be incorporated in the project at locations designated by the RE or disposed of outside the highway right-of-way in conformance with the Standard Specifications.
- Replace or repair damage bales as needed or as directed by the RE.
- Repair washouts or other damages as needed or as directed by the RE.
- Remove straw bales when no longer needed. Remove sediment accumulation, and clean, re-grade, and stabilized the area.

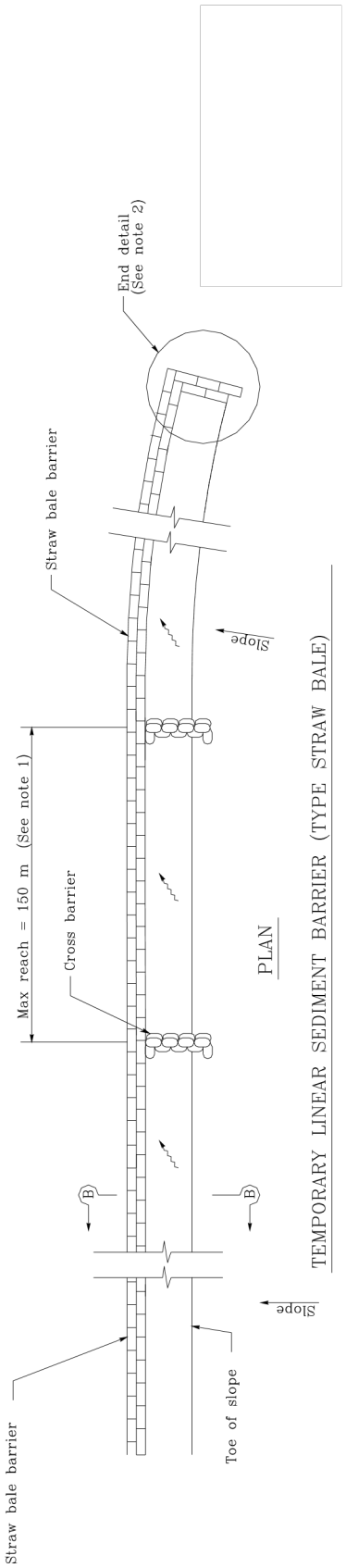
Straw Bale Barrier

SC-9



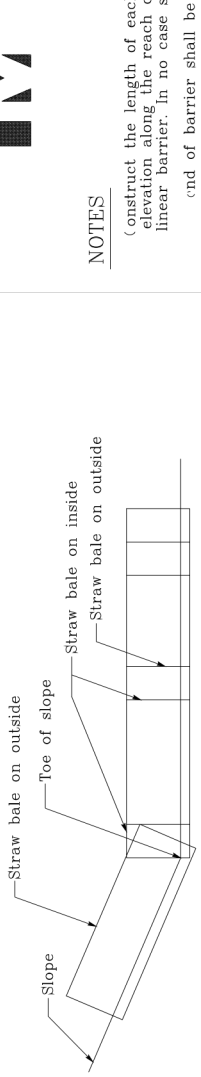
Straw Bale Barrier

SC-9



PLAN

TEMPORARY LINEAR SEDIMENT BARRIER (TYPE STRAW BALE)



END DETAIL

Caltrans Metric

NOTES

(onstruct the length of each reach so that the change in base elevation along the reach does not exceed 1/2 the height of linear barrier. In no case shall the reach length exceed 150 m.

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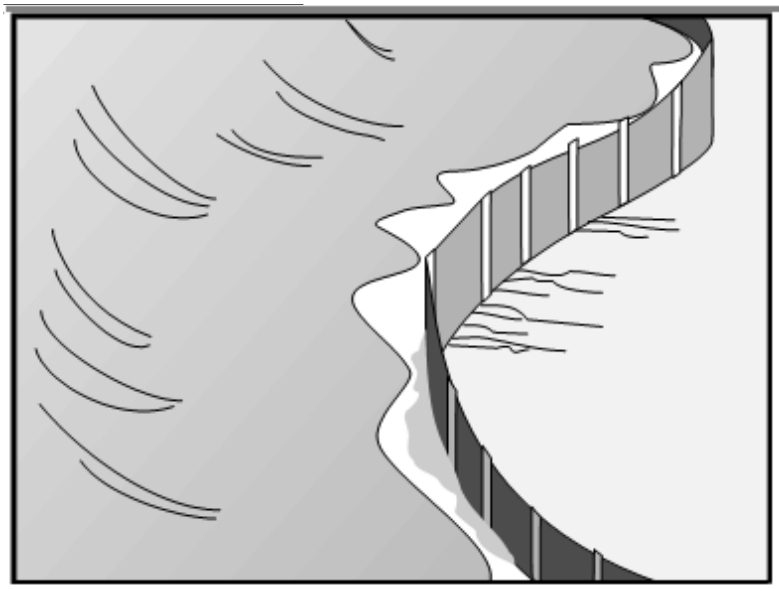
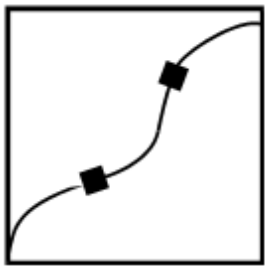
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TEMPORARY LINEAR SEDIMENT BARRIER
(TYPE STRAW BALE)

NO SCALE

ALL DIMENSIONS ARE IN
MILLIMETERS UNLESS OTHERWISE SHOWN





Standard Symbol

BMP Objectives

- ○ Soil Stabilization
- ● Sediment Control
- ○ Tracking Control
- ○ Wind Erosion Control
- ○ Non-Storm Water Management
- ○ Materials and Waste Management

Definition and Purpose

A silt fence is a temporary linear sediment barrier of permeable fabric designed to intercept and slow the flow of sediment-laden sheet flow runoff. Silt fences allow sediment to settle from runoff before water leaves the construction site.

Appropriate Applications

Silt fences are placed:

- Below the toe of exposed and erodible slopes.
- Down-slope of exposed soil areas.
- Around temporary stockpiles.
- Along streams and channels.
- Along the perimeter of a project.

Limitations

- Not effective unless trenched and keyed in.
- Not intended for use as mid-slope protection on slopes greater than 1:4 (V:H).
- Must be maintained.

- Must be removed and disposed of.
- Don't use below slopes subject to creep, slumping, or landslides.
- Don't use in streams, channels, drain inlets, or anywhere flow is concentrated.
- Don't use silt fences to divert flow.

Standards and Specifications

Design and Layout

- The maximum length of slope draining to any point along the silt fence shall be 61 m (200 ft) or less.
- Slope of area draining to silt fence shall be less than 1:1 (V:H).
- Limit to locations suitable for temporary ponding or deposition of sediment.
- Fabric life span generally limited to between five and eight months. Longer periods may require fabric replacement.
- Silt fences shall not be used in concentrated flow areas.
- Lay out in accordance with Pages 5 and 6 of this BMP.
- For slopes steeper than 1:2 (V:H) and that contain a high number of rocks or large dirt clods that tend to dislodge, it may be necessary to install additional protection immediately adjacent to the bottom of the slope, prior to installing silt fence. Additional protection may be a chain link fence or a cable fence.
- For slopes adjacent to water bodies or Environmentally Sensitive Areas (ESAs), additional temporary soil stabilization BMPs shall be used.

Materials

- Silt fence fabric shall be woven polypropylene with a minimum width of 900 mm (36 inches) and a minimum tensile strength of 0.45-kN. The fabric shall conform to the requirements in ASTM designation D4632 and shall have an integral reinforcement layer. The reinforcement layer shall be a polypropylene, or equivalent, net provided by the manufacturer. The permittivity of the fabric shall be between 0.1 sec^{-1} and 0.15 sec^{-1} in conformance with the requirements in ASTM designation D4491. Contractor

must submit certificate of compliance in accordance with Standard Specifications Section 6-1.07.

- Wood stakes shall be commercial quality lumber of the size and shape shown on the plans. Each stake shall be free from decay, splits or cracks longer than the thickness of the stake or other defects that would weaken the stakes and cause the stakes to be structurally unsuitable.

- Bar reinforcement may be used, and its size shall be equal to a number four (4) or greater. End protection shall be provided for any exposed bar reinforcement.

- Staples used to fasten the fence fabric to the stakes shall be not less than 45 mm (1.75 inches) long and shall be fabricated from 1.57 mm (0.06 inch) or heavier wire. The wire used to fasten the tops of the stakes together when joining two sections of fence shall be 3.05 mm (0.12 inch) or heavier wire. Galvanizing of the fastening wire is not required.

Installation

- Generally, silt fences shall be used in conjunction with soil stabilization source controls up slope to provide effective erosion and sediment control.

- Bottom of the silt fence shall be keyed-in a minimum of 150 mm (12 inches).

- Trenches shall not be excavated wider and deeper than necessary for proper installation of the temporary linear sediment barriers.

- Excavation of the trenches shall be performed immediately before installation of the temporary linear sediment barriers.

- Construct silt fences with a set-back of at least 1m (3 ft) from the toe of a slope. Where a silt fence is determined to be not practical due to specific site conditions, the silt fence may be constructed at the toe of the slope, but shall be constructed as far from the toe of the slope as practical.

- Construct the length of each reach so that the change in base elevation along the reach does not exceed 1/3 the height of the barrier; in no case shall the reach exceed 150 meters (490 ft).

- Cross barriers shall be a minimum of 1/3 and a maximum of 1/2 the height of the linear barrier.

- Install in accordance with Pages 5 and 6 of this BMP.

Maintenance and Inspection

- Repair undercut silt fences.
- Repair or replace split, torn, slumping, or weathered fabric.
- Inspect silt fence when rain is forecast. Perform necessary maintenance, or maintenance required by the Resident Engineer (RE).
- Inspect silt fence following rainfall events. Perform maintenance as necessary, or as required by the RE.
- Maintain silt fences to provide an adequate sediment holding capacity. Sediment shall be removed when the sediment accumulation reaches one-third (1/3) of the barrier height. Removed sediment shall be incorporated in the project at locations designated by the RE or disposed of outside the right-of-way in conformance with the Standard Specifications.
- Silt fences that are damaged and become unsuitable for the intended purpose, as determined by the RE, shall be removed from the site of work, disposed of outside the highway right-of-way in conformance with the Standard Specifications, and replaced with new silt fence barriers.
- Holes, depressions or other ground disturbance caused by the removal of the temporary silt fences shall be backfilled and repaired in conformance with the Standard Specifications.
- Remove silt fence when no longer needed or as required by the RE. Fill and compact post holes and anchorage trench, remove sediment accumulation, and grade fence alignment to blend with adjacent ground.

APPENDIX E: PHOTO PAGES

Photo 1: POD 1 spring diversion.

Photo 2: Stream crossing (STX-1) - two 30-inch plastic culverts to be upgraded.

Photo 3: Stream crossing (STX-2) - two 30-inch plastic culverts to be upgraded.

APPENDIX F: WATER USE RECORDS

WATER DIVERSION LOG

- Write down the date, source, and the metered amount
- Only record diversion for cannabis irrigation - not domestic or other irrigation usage
- Install meter as close to diversion source as reasonable
- Measuring device must have 15% accuracy
- Records must be kept on site, available for up to 5 years

Date	Source	Meter Amount	Notes
ex. 05/24/2018	*ex: POD-1*	*ex. 10,424 gals*	

WATER USAGE LOG

- Write down the date, source, and the metered amount
- Only record usage for cannabis irrigation - not domestic or other irrigation usage
- Use a meter as installed as close to point of irrigation or use estimate based on amount of time watering and known irrigation rate
- Records must be kept on site, available for up to 5 years

Date	Source	Irrigation Amount	Irrigation Location
ex. 05/24/2018	*ex: tanks, well, pond, other*	*ex. 10,424 gals*	ex: GH 1

WATER DELIVERY LOG

- Prior to delivery notify consultant/Humbold County Planning – emergency water delivery request.
- For each water delivery make sure to obtain a receipt with the following
    - Name
    - Address
    - License Plate Number, State Issuing
    - A copy of the Water Haulers License
    - A copy of Haulers Water Right or other authorization to take water
    - Quantity and source of water

Date	Water Hauler	Quantity	Source
ex. 05/24/2018	*ex. Waterboys INC*	*ex. 2000 gals*	*ex. Private Well*

APPENDIX G: FERTILIZER, PESTICIDE PRODUCT LIST AND USAGE REPORTING

Fertilizer and Amendment Application Log Sheet

WDID:

Watershed:

Year:

Sheet #: _____of _____

Product name	Fertilizer or Ammendment (circle one)	Type (circle type)	Nutrient content (N-P-K ratio)	Recommended application amount from product label (e.g. # of ounces per application)	Application units (grams, ounces, liters, gallons, etc.)	Recommended application schedule (daily, weekly, etc.)	Actual amount applied in this application (same units)	Date applied (Mo/Day)	Location (Cultivation area #, Greenhouse #, Hoophouse #, etc.)	Initials	Comments
	Fert./Amend.	liquid/solid									
	Fert./Amend.	liquid/solid									
	Fert./Amend.	liquid/solid									
	Fert./Amend.	liquid/solid									
	Fert./Amend.	liquid/solid									
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APPENDIX H: MONTHLY BPTC MONITORING AND MAINTENANCE RECORDS

BPTCs SCHEDULE												
Monitoring Element	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Water Usage Log	X	X	X	X	X	X	X	X	X	X	X	X
Road and Drainage Maintenance Log	X	X	X	X					X	X	X	X
Winterization Checklist										X	X	
Surface Water Diversion Forbearance				X	X	X	X	X	X	X		

CONDITIONAL BPTCs	
If	Then
You plan to do any land disturbance work (grading, clearing, terracing, roadbuilding, culvert installation, etc.)	Make sure you are in possession of all necessary permits (CDFW LSAA, County Grading Permit, etc.). Maintain the Land Disturbance Weather Log, Erosion Control Checklist, and Soil Disposal and Management Checklist. Install erosion and sediment controls within 7 days of the completion of the project. If the project is an emergency project in the winter period (Nov 15th to April 1st) the Regional Water Board and CDFW must be notified.
A storm produces 0.5 inches of rain within 24 hours or a storm produces 1 inch of rain over 7 days	Fill out the Road Drainage Feature Maintenance Log.
A 48 hours prior rainfall forecast predicts 0.25 inches of rain with 50% chance or greater	No agricultural chemicals/products can be applied.
Your diversion is a surface water diversion	Maintain Water Diversion Log as well as Water Usage Log.
There is exposed ground on your property	Erosion controls must be applied under the guidance of the Erosion Control Checklist

DAILY WATER DIVERSION LOG

- Fill out daily, write down the date and the metered amount
- Only record diversion for cannabis irrigation - not domestic or other irrigation usage
- Install meter as close to diversion source as reasonable
- Measuring device must have 15% accuracy
- Records must be kept on site, available for up to 5 years

Date	Meter Amount	Date	Meter Amount
ex. 05/24/2018	*ex. 10,424 gals*		

DAILY WATER USAGE LOG

- Fill out daily, write down the date and the metered amount
- Only record usage for cannabis irrigation - not domestic or other irrigation usage
- Use a meter as installed as close to point of irrigation or use estimate based on amount of time watering and known irrigation rate
- Records must be kept on site, available for up to 5 years

Date	Irrigation Amount	Date	Irrigation Amount
ex. 05/24/2018	*ex. 10,424 gals*		

WATER DELIVERY LOG

- Prior to delivery notify consultant/Humbold County Planning – emergency water delivery request.
- For each water delivery make sure to obtain a receipt with the following
    - Name
    - Address
    - License Plate Number, State Issuing
    - A copy of the Water Haulers License
    - A copy of Haulers Water Right or other authorization to take water
    - Quantity and source of water

Date	Water Hauler	Quantity	Source
ex. 05/24/2018	*ex. Waterboys INC*	*ex. 2000 gals*	*ex. Private Well*

LAND DISTURBANCE WEATHER LOG

A land disturbance is any activity that increases the amount of soil that will runoff the property when it rains. Examples of this are construction/maintenance of roads, building construction, grading, and site clearing. Please acknowledge the following requirements when engaging in land disturbance activities:

- Prior to any land disturbance the cultivator shall have a Biologist investigate the proposed site and inform CDFW and CALFIRE if any sensitive plant or wildlife species are identified
- Work that is valued over $500 in labor and material costs are to be performed by a licensed contractor
- No land disturbance activities are allowed during the Winter period (Nov 15 to April 1) unless authorized by a Regional Water Board Executive Officer

Fill out this log when you are doing permitted to do land disturbance work with the above condition met. For each day of land disturbance activity, the 24-hour forecast must be checked and recorded.
If the 24-hour forecast reports a chance of precipitation at 50 percent or greater of 0.5 inches or more within that period than all land disturbance work was stop and erosion controls put into place.

Date	Forecast chance of rain	Forecast depth of rain	Notes
ex. 05/24/2019	*ex. 20%*	*ex. 0.2 in*	*ex. Started regrading access road to cultivation area*

LAND DISTURBANCE WEATHER LOG			
Date	Forecast chance of rain	Forecast depth of rain	Notes

ROAD AND DRAINAGE FEATURE

MAINTENANCE LOG

Road surfaces and drainage features (culverts, drop inlets, trash racks) shall be closely inspected before the rainy season and after large storm events. Record the dates of inspection and mark down any maintenance work that was completed. Perform inspection and maintenance when any of the following occur:

- Prior to the start of the rainy season
- A storm produces 0.5 inches of rain within 24 hours
- A storm produces 1 inch of rain over 7 days

Examples of road and drainage feature maintenance:

- Wood or debris blocking entrance of ditch relief culvert or stream crossing culvert
- Sediment blocking rolling dip outlet removed and disposed of
- Rocking road where it is necessary

Any sediment or debris removed should be stabilized on a flat area away from surface water or stormwater flow.

Date	Pre-rainy season check or storm event	Maintenance Notes

ROAD AND DRAINAGE FEATURE MAINTENANCE LOG		
Date	Pre-rainy season check or storm event	Maintenance Notes

WINTERIZATION CHECKLIST

The winter season as defined by the State Water Board begins November 1st and ends April 1. Before the winter season begins the cultivator must go through this and the associated checklist and make sure the property that enrolled is winterized. The two associated checklists are the Erosion Control Checklist and the Soil Disposal and Management Checklist.

By November 15th complete the following:

- Complete the Erosion Control Checklist
- Complete the Soil Disposal and Management Checklist
- Block off seasonal roadways
- Refrain from using any heavy equipment during the winter season unless authorized
- Install linear sediment controls (silt fences, wattles) on the face of exposed slopes at the following spacing:
    - Slopes 0%-25% at 20 feet maximum apart
    - Slopes 25%-50% at 15 feet maximum apart
    - Slopes 50% and greater at 10 feet maximum apart
- Install linear sediment controls at the toe and break of any exposed slopes
- Complete the Drainage Feature Maintenance Log prior to the start of the rainy season
- Stabilize all disturbed areas and construction entrances and exits
- Stabilize all stockpiles using Stockpile Management BMPs (included with this document)
- All exposed or bare ground (cultivation area, access pathways) shall have erosion repair and control measures in place
- Any applicable checklist items that were not completed by November 15th should be reported on this form as well as a schedule for completion.

Date	*Notes*
Ex. 11/05/18	*ex: Wattles installed at upper cultivation area, perimeter of cultivation area seeded and mulched, all other checklists complete*

WINTERIZATION CHECKLIST	
Date	*Notes*

EROSION CONTROL CHECKLIST

The Erosion Control Checklist should be completed when any of the following occur:

- Within seven days of completing any land disturbance activities (grading, terracing, etc)
- When any earthwork using heavy equipment occurs
- Prior to the start of the winter period (Nov 15th)

Complete the following measures if applicable:

- ☐ Disturbed areas and/or stockpiles should be controlled by one or a combination of the following methods
  - o Seeded and mulched BMPs
  - o Hydroseed
  - o Replanted
  - o Stockpile Management
  - o Rock slope protection

- ☐ The lower gradient perimeter of disturbed areas should be controlled by one or a combination of the following methods
  - o Gravel bag berms
  - o Fiber rolls
  - o Straw bale barriers
  - o Silt fences
  - o Sediment settling basins

- ☐ Complete the Soil Disposal and Management Checklist
- ☐ Block off seasonal roadway
- ☐ Refrain from using any heavy equipment during the winter season unless authorized
- ☐ Install linear sediment controls (silt fences, wattles) on the face of exposed slopes at the following spacing:
  - o Slopes 0%-25% at 20 feet maximum apart
  - o Slopes 25%-50% at 15 feet maximum apart
  - o Slopes 50% and greater at 10 feet maximum apart
- ☐ Install linear sediment controls at the toe and break of any exposed slopes
- ☐ Complete the Drainage Feature Maintenance Log prior to the start of the rainy season
- ☐ Stabilize all disturbed areas and construction entrances and exits
- ☐ Stabilize all stockpiles using Stockpile Management BMPs (included with this document)
- ☐ All exposed or bare ground (cultivation area, access pathways) shall have erosion repair and control measures in place

Date	*Notes*
Ex. 11/05/18	*ex: Wattles installed at upper cultivation area, perimeter of cultivation area seeded and mulched, all other checklists complete.*

EROSION CONTROL CHECKLIST

Date	*Notes*

SOIL DISPOSAL AND MANAGEMENT CHECKLIST

The Soil Disposal and Management Checklist should be completed when any of the following occur:

- Whenever soil, growth medium, or construction materials are to be stored on site.
- Prior to the start of the winter period (Nov 1st)

Complete the following measures if applicable:

- Ensure that all soil, growth medium, and construction materials are stored in a stable, contained manner outside of the riparian setbacks.
- Large organic materials (woody debris, root balls) should be stored separate from soil stockpiles. These materials should be properly disposed of (landfill, burning, composted).
- Sediment control devices (silt fences, straw waddles, strawbales) and tarps should be used to protect soil stockpiles from erosion.
- Alternatively, the stockpiles can be vegetated to prevent erosion.

o Revegetate using a mix of native plant species and seed.
    - o Cover with straw at a rate of two tons per acre
    - o Apply non-synthetic netting or similar erosion control fabric (jute) on slopes greater than 2:1
- Any soil that is not stored for reuse or vegetated shall be disposed of at an appropriate green waste facility.

Date	Notes
Ex. 11/05/18	*ex: Leftover growth medium has been tarped and surrounded by straw bales on the flat by the cultivation area.*

SOIL DISPOSAL AND MANAGEMENT CHECKLIST	
Date	*Notes*

APPENDIX I: REFERENCES

REFERReferencesENCES

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